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FOOD INDUSTRIES

THE NEWS OF • PRODUCTION • ENGINEERING • DISTRIBUTION

BAKERY PRODUCTS

BEVERAGES

CANNED AND PRESERVED FOODS

CONFECTIONERY AND CHOCOLATE

DAIRY PRODUCTS AND ICE CREAM

FATS AND OILS

FLOUR AND CEREAL PRODUCTS

MEATS AND MEAT PRODUCTS

OTHER FOODS AND SPECIALTIES

THE DROUGHT CONTINUES

Drought conditions are getting worse, not better. Even New England is suffering.

Forage-crop shortages, lack of water for animals, as well as reduction of food crops through the forces of nature are rapidly changing the future food-supply situation. Secondary industrial and economic changes will arise from the drought.

The fundamental question, is it merely weather or is it a change of climate, cannot yet be answered. But food-company executives may possibly need to revise their plans from ones based on a surplus food supply to one of impending near-shortages.

AUGUST 1934

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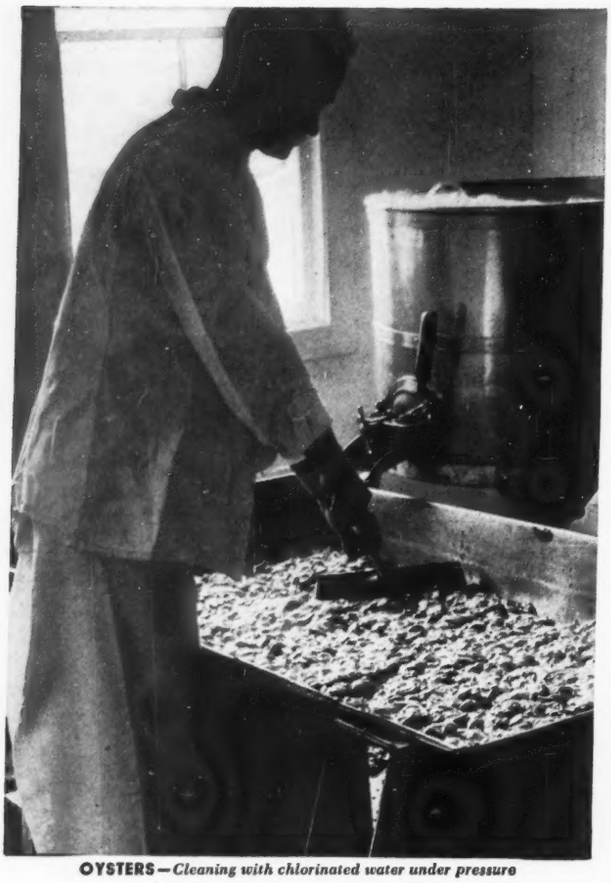
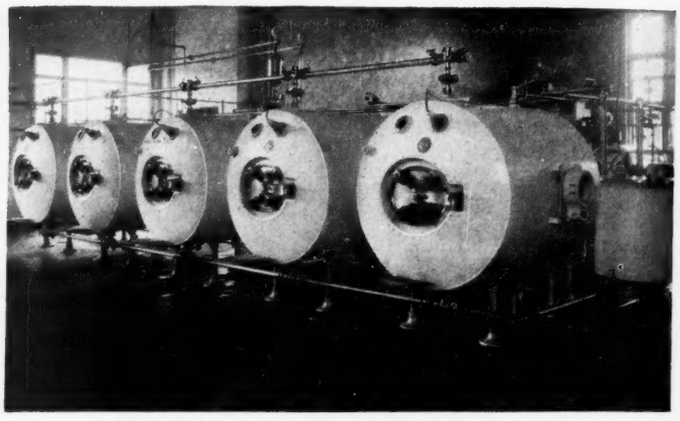


OYSTERS—*Cleaning with chlorinated water under pressure*

BREAD—*HTH prevents mold and rope spoilage in scores of bakeries*



MILK—*HTH spray keeps down bacteria counts in dairy plants*

For Low-Cost Quality Insurance...

USE HTH ON ALL YOUR FOOD HANDLING SURFACES

YOU can build a new plant with insurance money *after* trouble occurs, but you can't build a new reputation that way.

That's why so many leading food manufacturers have adopted the "quality insurance" that only *micro*-cleanliness with HTH can provide. They find that it pays dividends every day by *preventing* trouble before it occurs.

HTH is a concentrated powder for making chlorine sterilizing solutions—the only kind of a bactericide and fungicide (except steam) that's safe for use on food equipment. Unlike steam, HTH solutions cause no expansion strains—there are no living bacteria left behind due to rapid condensation on cool surfaces—no danger of scalding and added dampness around the plant.

One 4-lb. can of HTH makes 3,000 gallons of a germ-killing solution of 100 parts per million available chlorine—a non-poisonous rinse that leaves no objectionable taste or odor. One manufacturer found that 33 cents' worth of hypochlorite per day did a better sterilizing job than steam costing $2.75 in fuel consumption—a daily saving of $2.42!

Read the list below. It shows how widely HTH is being used throughout the food industries. If you've never tried chemical sterilization with HTH, ask your supply house to send you a trial case of a dozen 4-lb. cans to make a thorough test.

HTH
A stable and efficient chlorine-carrier for convenient application as a
Bleach – Germicide – Bactericide
Disinfectant – Deodorant
Fungicide
This package is an accurately-measured unit containing not less than 2½ lbs. of available chlorine.
Manufactured by
The MATHIESON ALKALI WORKS Inc.
250 Park Avenue, New York, N.Y.
U.S.A.

The* MATHIESON ALKALI WORKS *(Inc.)
250 Park Avenue **New York, N.Y.**

Soda Ash . . . Liquid Chlorine . . . Bicarbonate of Soda . . . HTH and HTH-15 . . . Caustic Soda . . . Bleaching Powder . . . Ammonia, Anhydrous and Aqua . . . PH-Plus (Fused Alkali) . . . Solid Carbon Dioxide.

• • •

HTH is a highly concentrated calcium hypochlorite for making germicidal solutions, either alone or in combination with soda ash. HTH is packed in 4-lb. cans, one dozen to the case. Each can makes 30 gallons of a concentrated supply solution, containing 1% of available chlorine, at a cost of about 5¢ per gallon.

HTH Sanitation is steadily becoming the standard practise with these producers of food products:

Bakeries	Distilleries
Bottling Plants	Fish Packing Plants
Breweries	Ice Plants
Canneries	Ice Cream Plants
Cheese Plants	Meat Plants
Creameries	Milk Plants

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FOOD INDUSTRIES

NEWS OF PRODUCTION • ENGINEERING • DISTRIBUTION

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THIS IS THE AUTOCAR CODE

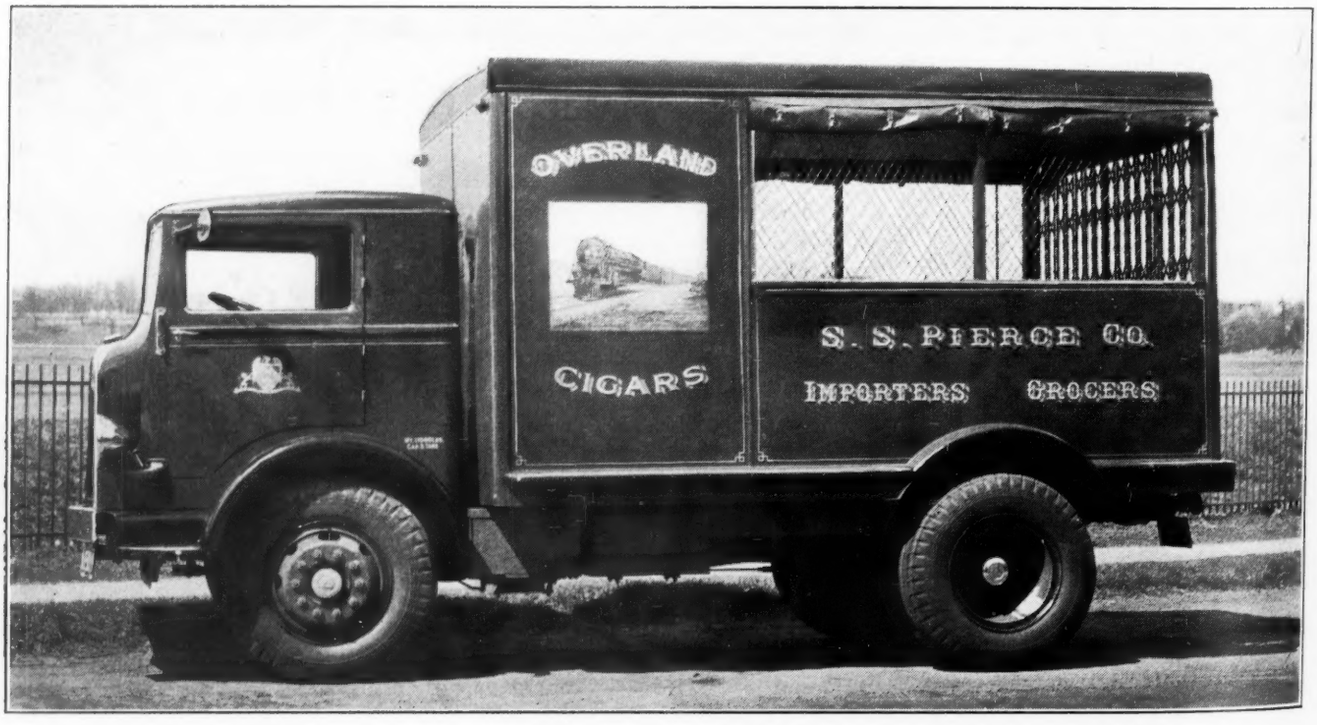
Tested By Time—Approved By Thousands

To design and produce the very best motor trucks possible—trucks that will be more economical and profitable to their owners than any others that may be available at any price.

The first cost of Autocars is not low—for the obvious reason that low first cost and superior quality do not go hand in hand—but Autocar operating costs are low; low for every operating mile, thereby definitely increasing profits.

This superior quality is brought about by many things. First and always in the minds of the Autocar organization is the determination to design and build the best possible motor truck. This determination motivates engineering, metallurgy, purchasing and manufacture. Whenever it is disclosed that better materials can be bought, they are procured, and after they have been purchased they are not accepted on faith. Painstaking physical and metallurgical inspection at the Autocar Factory makes absolutely certain, before acceptance, that all materials received are precisely what was specified on the order.

Autocar offers to the user of highway transportation the Conventional Engine-under-the-hood type of motor truck and also the short-wheelbase Engine-under-the-Seat chassis. Each has distinct advantages for different classes of service. Both are completely built at the Autocar Factory and are not merely assembled from units bought at a price here, there or anywhere.



AUTOCAR TRUCKS

THE AUTOCAR COMPANY, ARDMORE, PA.

FOOD INDUSTRIES

THE NEWS OF • PRODUCTION • ENGINEERING • DISTRIBUTION

Established 1928—McGraw-Hill Publishing Company, Inc.
Volume 6 Number 8

New York, August, 1934 . . . Laurence V. Burton, Editor

Common Sense vs. Government Compulsion

MORE fully informative labels on packaged foods are important both to the consumer and the producer. Progress toward better labeling should be unremitting and uninterrupted. But this progress should be sane and orderly. If it is not, it will require retreat and costly readjustments.

● Canners of fruits and vegetables are threatened with a demand for too rapid and unconsidered an advance into this complex field. Overzealous officials in Washington seek to press toward admittedly good objectives by unsafe short cuts which involve compulsion.

● Two important steps must precede the adoption of compulsory quality grades on labels if these are to serve customers satisfactorily as a source of information regarding the contents of a package.

● First, there must be an accurate definition of standards of quality, based on measurable properties of the food. These must be objectively determinable standards which can be subjected to laboratory test to determine whether there is compliance or non-compliance with the standard as a matter of *fact*. It should not be a matter of *opinion*.

● Second, there must be a general acceptance and *uniform* use of these quality standards. A standard lacking such acceptance and application is meaningless. It may be even more deceptive than no designation at all.

● Fixing of these objective standards and creation of a basis for their general acceptance is a task yet to be accomplished. When accomplished, and only then, will grade labels possess any real meaning.

● Apparently government officials do not recognize the necessity of taking the first two steps in advance of the time when they ask that compulsory quality grades be required on all labels.

● Our national experience in the enforcement of the McNary-Mapes Substandard Amendment to the food law shows how difficult it is to apply even that progressive step. Yet the government would multiply these troubles many times over by compulsory grading and labeling of all qualities. Furthermore, the public does not possess the ability to tell what it actually expects to find under a given quality designation.

● Less haste will make more speed. Impatient officials may still attempt to terrorize industry into unwarranted "progress". The canners' code authority committee has probably, but not surely, prevented rash haste by its wise recommendation to seek consumer wishes before acting. We hope this wiser policy will prevail.

● Let there be constant progress toward better, more informative labels. But a stampede is not in order, nor would it be useful to anyone.

AS IT LOOKS TO US

Shall We Abandon the Patent Digest? . . .

Only seven persons have responded to our request of last month for an expression of interest in the Patent Digest. In the July issue we requested a vote, saying that 200 names would be required to get the department reinstated. On this basis we may have to abandon the Digest. Decision will be deferred until Aug. 20.

What is your wish?

Who Wrote the Codes? . . .

Donald Richberg, poet, philosopher, lawyer, former legal counsel for N.R.A., and now coordinator extraordinary for the entire recovery program, appears to have been extremely well insulated from the realities of code writing in order to be able to make some of the statements which he made on July 5.

In replying to critics of N.R.A., in substance he raised the oratorical question: "Well, who wrote the codes?", the implication being that industry wrote the codes.

If it happens that any of our readers have not been acquainted with someone who has labored long and perspiringly on a code committee, we urge them to hunt up such a person and learn such of the reasons as are available why it took so long to get a code for his industry. Most of the preliminary meetings of the code committees with government representatives were held behind closed doors. Both the daily and the business press were excluded. But we unblushingly admit that we have done a certain amount of snooping, eavesdropping and open-transom listening, besides conversing with the committee members themselves to get at the actual procedure.

To explain the philosophy of such star-chamber proceedings is beyond us at the moment, but if they had been held more openly we believe it would be much more happy for the government at the present time. And Mr. Richberg's remarks might conceivably take on a different tone.

The fact is that industries tried, but were not permitted, to write their *own codes.* While admitting that many of the initial attempts at code writing were abortive, inaccurate, and sometimes productive of code provisions that industry really did not want, it is more true that endless months were consumed in wrangling with N.R.A. representatives who insisted that their own ideas should be incorporated in the codes.

Probably the extreme form of this attempt of government to force an industry to write a code that would be, in effect, largely a government written code, is to be found in one of the food industries. For more than three months the code committee was battling with the government, not on what it could write into the code but on *what it could keep out* of the code.

Let the apologists for the shortcomings of N.R.A. look into that feature before blaming industry.

Pure Zinc Not a Poison

Those who regard pure zinc as a poisonous metal, such as is the case with arsenic, lead, antimony, or cadmium, will be interested to learn that Brinker and Fairhall, of Harvard School of Public Health, have found that pure zinc is not a poison, although when some of its compounds are taken internally in large quantities it may produce gastric irritation.

In drinking water, the flavor of zinc salts may become very unpleasant to the taste before the quantity present is sufficient to irritate. In food, however, where other flavors predominate, it is possible to eat enough zinc unnoticed to produce nausea, but one is not poisoned.

"Zinc cannot be allowed to remain in contact with foods or beverages where moisture and acidity are encountered, without the possibility of results which may be decidedly unpleasant. This means that the householder should never cook or store food in galvanized utensils, and that brass utensils should not be used in cooking acid food nor in storing foods or drinks.

"Zinc foil is a safe wrapper for dry, non-acid substances such as cheese in a package or bar chocolate, but cannot, for example, be used on cheese, because of the rapidity of corrosion."

Dreams vs. Plans . . .

Brawn without wisdom defeats its own ambitions. Even a successful strike needs a very wise head to direct its policies. When a general strike committee possesses so limited a vision that it "permits" only nineteen restaurants to operate in San Francisco, to name a single manifestation, it is inevitable that the strike will collapse.

Big dreams are not synonymous with big plans. Foresight and wisdom that make for success are the indispensable qualifications that make employers and create employment.

All men, even the humblest, must learn that bitter lesson.

To Safeguard Quality . . .

Struggling to safeguard the good name of their product, the Sweet Wine Producers' Association of California recently held a meeting to discuss means of protection against certain Eastern distributors said to be blending inferior wines with choice wines and marketing the "blend" as a "California wine." Three steps were decided upon: (1) Request State health authorities and officials who enforce the federal Food and Drug Act to enforce the laws against adulteration; (2) ask for stringent California laws with heavy penalties against adulteration or false labeling: and (3) *urge wineries to bottle their products at their own plants under their own trademarks,* refusing to make bulk sales wherever adulteration was even a remote possibility.

These are necessary moves. Having won the federal ruling that nothing which is not made from grapes may be labeled "wine," it is logical that California vintners should then turn attention to preventing adulteration of good wine with wine of inferior quality. This is the age-old and ever new battle of the honest producer against those who would ex-

ploit his good name to the detriment of the trade. The wine industry cannot hope that the pirates will pass it by. On the contrary, now that repeal has thrust sudden changes and a multitude of problems upon wine producers almost overnight, the industry is caught unprepared and offers an attractive opportunity to the unscrupulous. But this will be a temporary situation. If wine is to take its proper place as one of the staple food products of this country, its producers will have to cooperate in safeguarding the quality of their product, just as has been found necessary in other lines.

Mayonnaise . . .

Those who look longingly at the mayonnaise-salad dressing industry as a greener field on the other side of the fence are invited to study the statistics of that industry as presented elsewhere in this issue.

Scarcely a month passes without its two or three inquiries about how to get into the business, and it is all too evident that not one in ten of these inquirers possesses the requisite capital, knowledge or business experience to enter this highly competitive field.

To such inquirers we commend in particular the figures giving the manufacturers' invoice price per gallon. Unless the newcomer can beat those prices, he must have enough money to hang on until his volume permits equaling them. And it will take a lot.

To put it crudely and bluntly, it is our opinion that the mayonnaise business is a swell business to stay out of.

A New Stove . . .

Possibly you have heard of the new A.G.A. cook stove which burns only 8 (count 'em) pounds of anthracite or coke per 24 hours. Though this is a cook stove that will not find much use in food plants, unless it might be in preserve manufacture or experimental kitchens, it is both a startling development in an old field and a new factor to reckon with in the future.

To say that it may change the whole attitude of many a housewife toward cooking in the home when it is a house—the stove is not adapted to apartments—is not an overoptimistic statement. Prepared cereals may find that this stove may enhance the competition of the cooked cereal. Home baking will become infinitely easier and much more certain of success.

This new stove, plus the new leisure for housewives, constitutes a possible new problem to be reckoned with in long-time plans for the future.

Practical Unemployment Insurance . . .

Of all the frailties of mankind, one of the commoner is our proneness to accept the form for the substance of things hoped for. We confuse the symbol with the reality.

We often seek money when it is not money, but the things that money will buy—that we want. We raise a crop not because we really want the crop but because we want the things it can be traded for.

We confuse the right to work with the right to a job. We seek jobs, yet all that many want is subsistence.

And now the federal government, so the President says, is about to provide unemployment insurance—a plan that is to be enforced upon all industry. Yet, after all, such an insurance, idealistic though it may be, can be little more than a symbol for subsistence.

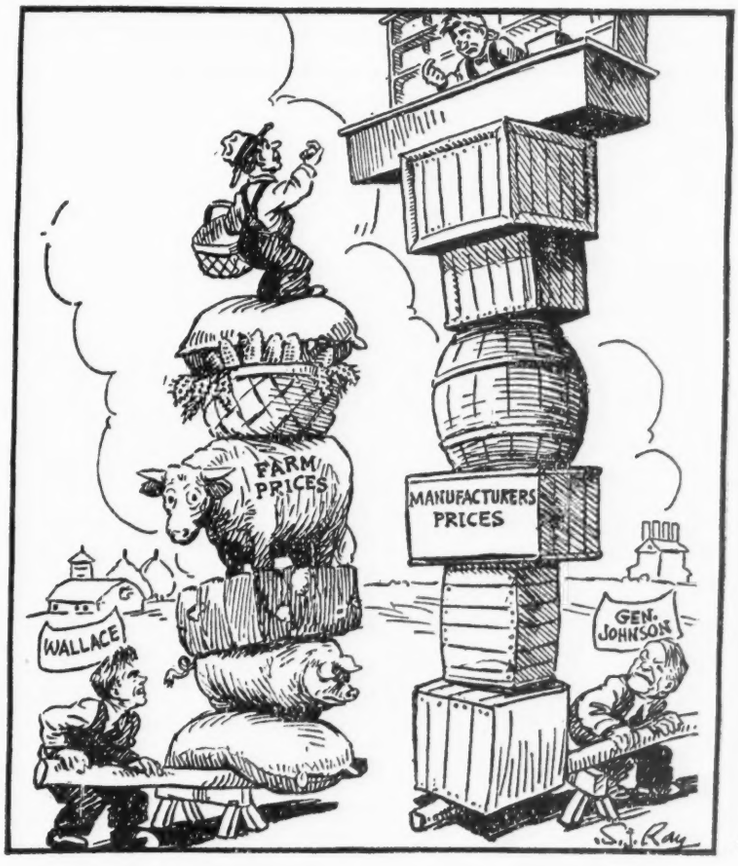
To the thoughtful man, it is a source of satisfaction that such a leader as Owen D. Young is recalling to the attention of the country that all persons can and must do much more for themselves than they are now doing in the way of providing for their own subsistence in periods of unemployment. He recalls the earlier day of the well-stocked cellar, the pork barrel, the garden—all of them provisions for the future in which the insurance was a reality and not a symbol.

Even though an act of Congress may put through a plan of unemployment insurance that will be at best only a convenient symbolism—a substitution of the form for the substance—it lies within the power of great masses of humanity to do vastly more for themselves than they have been doing in the current decade.

Unemployment insurance will be splendid if it can be made successful, but, until such a time, the realities are always open to all of us.

They Don't Seem to Be Getting Any Closer Together

From the Kansas City Star



Ultra-Violet Rays

Now Go to Work

In Dairies

By L. V. BURTON
Editor of Food Industries

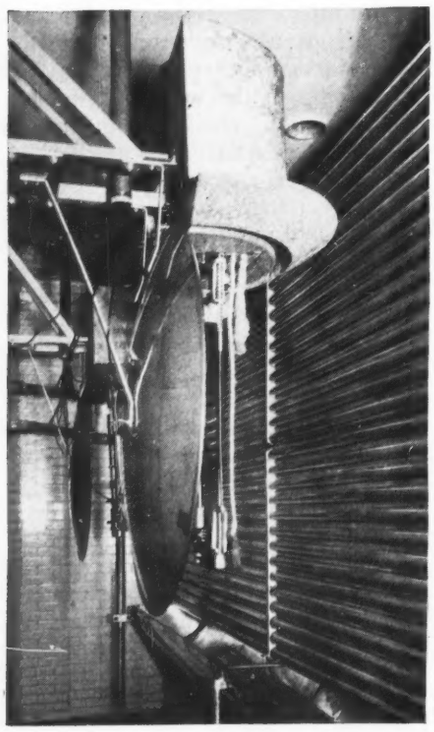


Fig. 1—Flat-type irradiating unit made by Cherry-Burrell for the Hamilton Park (Chicago) plant of Borden Farm Products Co. of Illinois. Four "U" lamps irradiate 12,000 lb. of milk per hour.

◆

Fig. 2—Flat-type irradiator at Carlson-Frink Dairy Co., Denver. Note the exhaust ducts to remove ozone and products of combustion from arc lamps.

EVER since 1924, the effect of ultra-violet rays on foods containing ergosterol has been known through the work of Prof. Harry Steenbock at the University of Wisconsin (U.S. Patent No. 1,680,-818) and the late Dr. Alfred F. Hess, of Columbia University. As soon as this new knowledge became public, it was the opinion of Louis J. Auerbacher, of the Dry Milk Co., a Borden subsidiary, that milk also could be successfully irradiated. But the two discoverers of the principle of irradiation privately expressed themselves as very dubious about it.

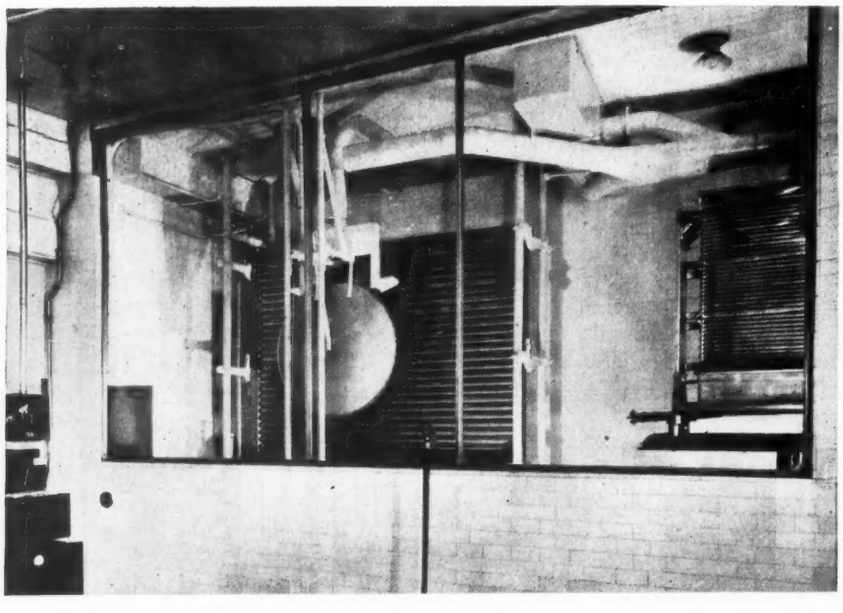
Mr. Auerbacher, an electrical engineer, refused to be discouraged, however. Tests were conducted at the company's laboratory in Bainbridge, N. Y., by Dr. G. C. Supplee and his associates, where it was quickly shown that a measurable vitamin D potency could be easily generated in fluid milk in quantities commensurate with the energy input.

After this discovery by Dr. Supplee, there remained two important steps to be taken before the irradiated milk could be offered to the public. First, it was necessary to determine the optimum conditions for irradiation; second, but more important for gaining a public acceptance of this form of vitamin D milk, it was necessary to show by clinical tests that irradiated milk was as successful in protecting human infants against rickets as it was in protecting rats.

The Dry Milk Co. began to market irradiated dry milk in 1928, but long before that it was supplying irradiated fluid milk in experimental quantities to Dr. Hess for the highly important clinical tests. In the later work the milk was supplied from the pioneer fluid milk plant of the country, Borden Farm Products Co., Detroit, Mich.

In the splendid research work by Dr. Supplee, it was established that a thin film of milk with a very short exposure to ultra-violet rays acquired plenty of vitamin D without acquiring an off-flavor. And, what is more important, this could be accomplished without any loss of vitamin A. There had been many groundless fears on the latter point. In this investigation it was found necessary to develop more reliable sources of ultra-violet rays than were then available. Through the cooperation of the research and engineering department of the National Carbon Co., arc lamps and special carbons of high efficiency were produced for this service.

Clinical tests by Drs. Hess and



Lewis showed that the carbon-arc-irradiated milk, produced under conditions determined by Dr. Supplee, gave complete protection against rickets in infants. About four years elapsed between the announcement of the discovery of the principle of irradiation and the time when Dry Milk Co. went onto the market with irradiated dry milk.

The Steenbock patent broadly claimed the process of irradiating foods. Dr. Supplee, however, received a process patent specifically for irradiating milk.

The following commercial methods are now available for increasing the vitamin D content of fluid milk:

Direct irradiation of the milk, which has come into commercial use since February, 1933. Addition of a measured quantity of a standarized vitamin D concentrate to the milk itself. Feeding irradiated yeast to cows, which will cause them to produce vitamin D milk. A possible fourth method that has no commercial promise at all is the direct irradiation of the cows themselves.

Among the important technical difficulties overcome in the development of the irradiation process was the failure of the older ultra-violet lamps to maintain a constant output of ultra-violet rays. This fault caused much delay in the development of satisfactory commercial systems of irradiation. Inventions always come in their proper chronological sequence, and it seems forever impossible to develop an invention out of its proper order. Hence the development of a special type of motor-fed, industrial flaming arc lamp and flaming carbons in 1927 and 1928 was a very important step in practical milk-irradiation technique, because it was the first commercially available source of ultra-violet rays giving a constant intensity of radiation.

One of the setbacks which beset the development of irradiation in its early days was the occasional loss of ability of certain types of ultra-violet lamps to maintain a constant output. Through the cooperation of Dr. Supplee and Dr. M. J. Dorcas, of National Carbon Co., the special arc lamp was introduced which eliminated the problems of variation of output. Since that time, however, all types of ultra-violet-ray sources have been much improved.

The first equipment used by Dry Milk Co. for irradiating its milk is the flat-type irradiator (see Fig. 1) made by Cherry-Burrell Corp. It has a capacity of 10,000 lb. per hour and has been operating on about 200,000 lb. of milk per day for a long period of time. Cherry-Burrell Corp., working in cooperation with the National Carbon Co., found that the "U" carbon with the lamp placed 20 in. instead of 24 in. from the flat surface of the irradiator produced a more satisfactory irradiation in this type of irradiator than a "C" carbon at 20 in. distance. With a one-lamp outfit, a capacity of 3,000 lb. an hour was obtained, and with a four-lamp outfit the same surface irradiator produced 12,000 an hour.

Other installations of the flat type irradiator made by Cherry-Burrell which are now operating successfully are the following:

Ira Wilson Creamery, Detroit.
Steffens Dairy, Oklahoma City.
Carlson-Frink Co., Denver.
Home Milk Co., Sacramento.

Borden Farm Products Co., Hamilton Park, (Ill.) plant is installing a new unit shown in Figs. 1 and 3.

The Creamery Package Manufacturing Co. also has developed a type of irradiator which is quite different in appearance from the Cherry-Burrell flat type. This unit has a capacity of 4,000 lb. per hour. Among the plants in New England which began

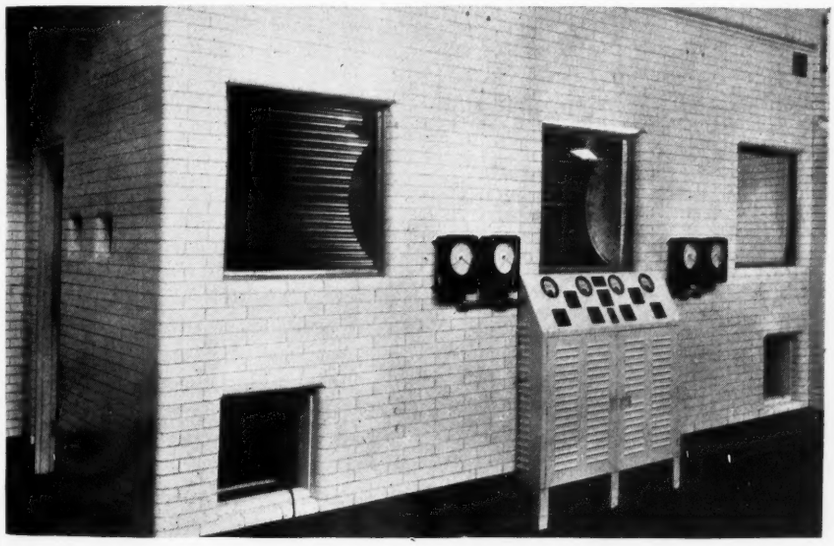


Fig. 3—Borden's Hamilton Park (Ill.) plant with irradiators inclosed in a tiled room. Control panel in front of center window.

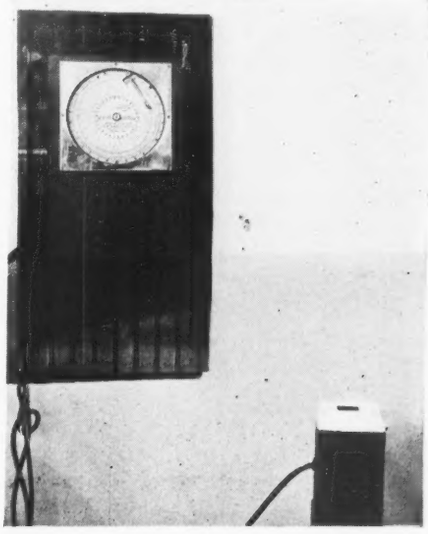


Fig. 4—Ultra-violet light integrating graphic meter made by Westinghouse for Dry Milk Co. to make the record shown in Fig. 5. It employs a titanium element in the photo-electric cell.

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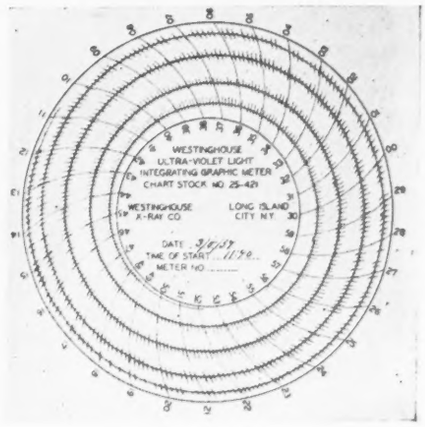
Fig. 5—This chart is something new in a dairy. Each little cross line represents one discharge of the condenser. The more discharges the more ultra-violet rays of the right wave lengths.



to use it to irradiate milk early in 1934 were Worden Dairy Co., Waterbury, Conn.; Mitchell Dairy Co., Bridgeport, Conn.; Hood Dairy Co., Providence, R. I. In the Middle West, Pevely Dairy Co., St. Louis; Rochester Dairy Co., Rochester, Minn.; Producers Dairy Co., Benton Harbor, Mich., installed these units. Abbott Dairies in Philadelphia also are using this equipment.

In principle both types of irradiators are simple. In each of them a measured quantity of milk is allowed to flow down over a surface exposed to a source of ultra-violet rays with everything under careful control.

The flat irradiator is shown in Figs. 1 and 2, in which a Cherry-Burrell positive metering pump with a definitely fixed capacity is used to distribute the milk over the surface irradiated. If the lamps go out for any reason, the milk pump stops. And, if the installation involves a multiple lamp unit, if anything happens to any one lamp all lamps are thrown out and the milk pump stops. The flow switch permits the lamps to operate only when the equipment is being supplied with milk, and thereby prevents any milk being passed through the apparatus without receiving the proper treatment with ultra-violet rays. A recording ammeter gives the record of the amperage drawn by the lamps and a simultaneous record of the operation of the pump.

In the flat type of irradiator, the milk flows downward over a milk cooler, and permits the possibility of cooling the milk simultaneously with irradiating. To prevent exposure of operators to powerful ultra-violet rays the whole equipment must be inclosed in a special room. All of the air which passes into the irradiation room is drawn through Dust-Stop filters. An exhaust fan operates at all times to remove the products of combustion from the lamps and any ozone which is formed (see Fig. 2).

Although the principle of the Creamery Package Manufacturing Co. irradiator is similar, its appearance is strikingly different. A special Viking pump with a Reeves variable-speed drive delivers exactly 4,000 lb. of milk per hour to the apparatus, which is an inverted truncated cone (see Fig. 6). A carefully designed distributing trough spreads the milk in a very thin layer on the inside of the cone. The milk flows downward in a layer only 0.3 mm. thick—so thin that the metal is visible through the milk.

Exactly three seconds is required for the flow of milk to reach the bottom. The time of exposure here, as in the other type of irradiator, is most important. In the center of the cone (or shell, as it is called) is a dual trimmed carbon arc, equipped with type "C" carbon. This part of the equipment is produced by National Carbon Co. (see Fig. 7).

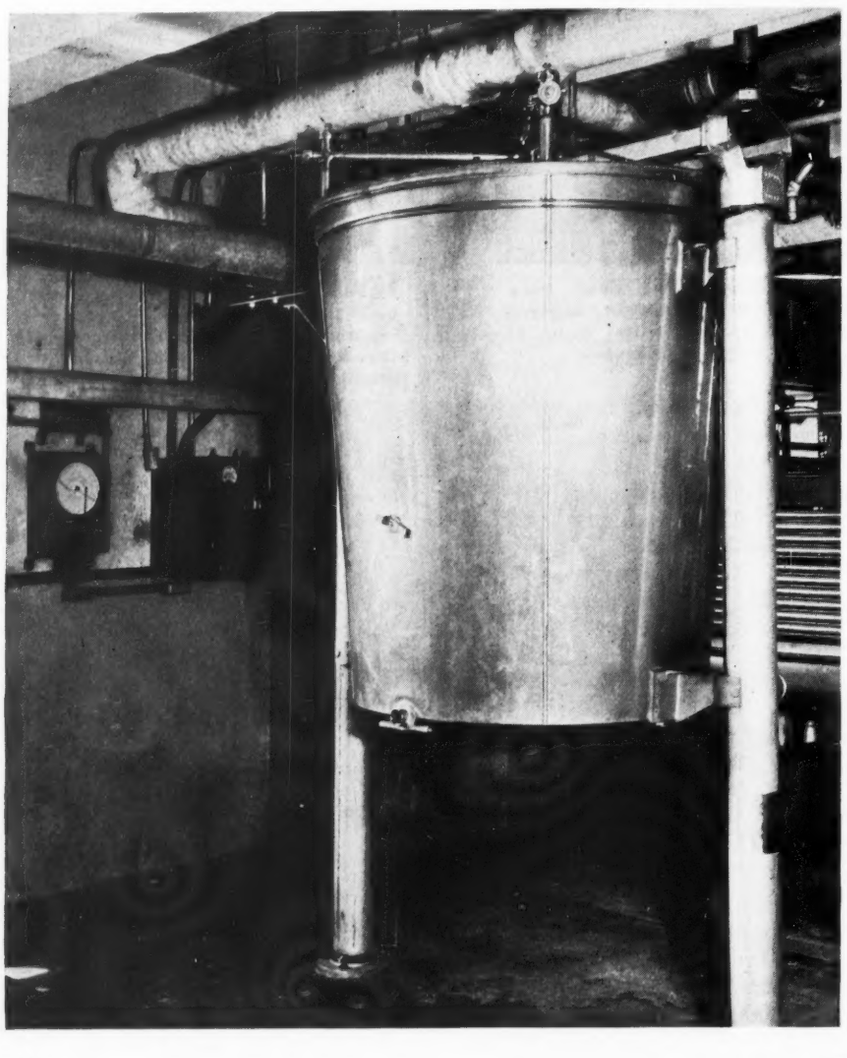
In this arc there are two pairs of carbons, from which the name "dual trimmed" is derived. Only one arc burns at a time, the arc alternating at 20-minute intervals between one pair of electrodes and the other. This type of lamp will burn throughout a complete working day without interruption for changing carbons.

Passage of milk through the apparatus will give to each quart a vitamin D potency of from 50 to 55 Steenbock units, which unitage has the same clinical value as three teaspoonfuls of standard cod liver oil. Similar results are obtained in the flat type of irradiator.

Ozone, unavoidably generated by arc light in the apparatus, needs to be constantly removed in order to insure the good flavor of the milk. In the Creamery Package unit, this is done by means of a 4-in. exhaust blower which blows a draft of fresh air in at the bottom of the shell, upward past the arc light, and out through the arc-light housing, and thence out the top of the apparatus to outdoors.

Protection of the eyes of the operators is another very important feature, for exposure to a powerful source of ultra-violet rays would soon result in painful irritation and swelling of the conjunctivas of the eyes. Cherry-Burrell units are placed inside of a special room having windows which permit the operator to observe without being exposed directly to ultra-violet rays (see Fig. 3). Creamery Package mounts the shell at such a height above the floor and puts perforated doors on the bottom (see

Fig. 6—Creamery Package irradiator at Worden Dairy Co., Waterbury, Conn. All ready to operate except for connecting the discharge pipe on outlet at bottom.



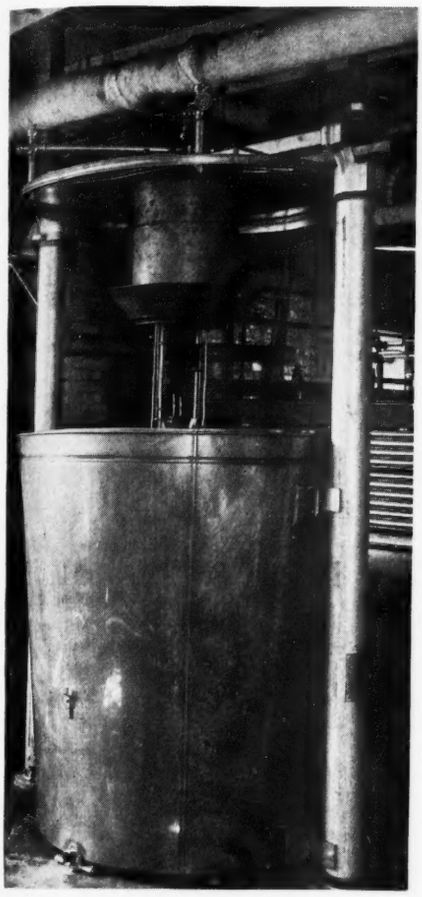


Fig. 7—Irradiator with shell dropped to show the carbon arc. An exhaust fan at left of the lid pulls air up through an aperture above the arc lamp to remove any gases.

Fig. 8) so that one cannot possibly look into the equipment by accident.

In both types of irradiators there are certain technical safeguards to be looked after. Any change of current strength would result in over- or under-irradiation of the milk. Accordingly, both kinds of equipment are supplied with recording ammeters which also are equipped with a second pen that simultaneously records the current which operates the motor on the measuring pumps. By means of these two records it is possible to be certain that there is a proper rate of flow of milk past the arc lamp burning at the correct intensity.

At this point it should be explained parenthetically that the Dry Milk Co. has introduced another feature of control. Knowledge of the amount of electricity passing through the carbon arc can be obtained from the recording ammeter, but not the amount of irradiation of the desired wave length of ultra-violet. To illustrate, if another type of carbon, other than the standard type "C" carbon, were to find its way into the apparatus, unknown to the operator, the ammeter could still show that the current intensity of 60 amp. was passing, but the degree of irradiation of the milk would be somewhat different. Because of the fact that dairy inspectors and health officers have begun to call for a more accurate check of the process of irradiation, Westinghouse Research Laboratories, in collaboration with Dry Milk Research Laboratories, have devised a recording ultra-violet-ray meter which will accurately show the degree of irradiation efficiency (see Figs. 4 and 5). In checking the irradiation procedure, its use is comparable to the use of the recording thermometer for checking the operation of pasteurization equipment.

A ring-shaped trough at the bottom of the inside of the cone of the Creamery Package irradiator collects the milk and leads it to a pipe which in turn delivers it to the coolers and fillers. The center of the bottom of the shell is an open space about 2 ft. in diameter which is normally closed by a pair of perforated semicircular hinged doors (see Fig. 8). Fine perforations allow air to be drawn in by means of the exhaust fan which carries away the ozone. Any carbon or mineral particles dropping from the arc lamp collect on this screen and thus do not come in contact with the milk in any way.

Business and Economic Aspects

Vitamin milk, whatever the method that is employed to contribute the desired potency, is both a business-getting and public-health measure. Since readers of FOOD INDUSTRIES are concerned primarily with processing and management problems, the public-health angle is not treated here.

One of the earlier users of ultra-violet irradiation in the dairy field went into it to lick a bad competitive situation. Price-cutting was rife. There was no bottom to the market.

Fig. 9—Bottle cap carrying the seal of acceptance of the advertising claims made by the American Medical Association as to dairy.

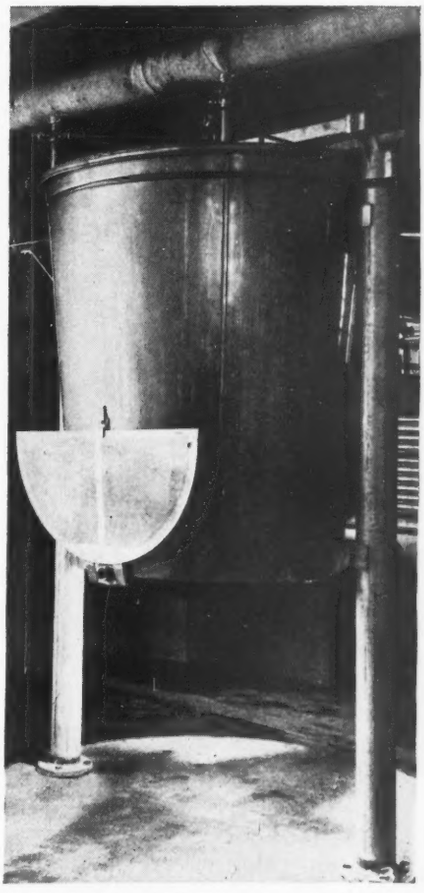


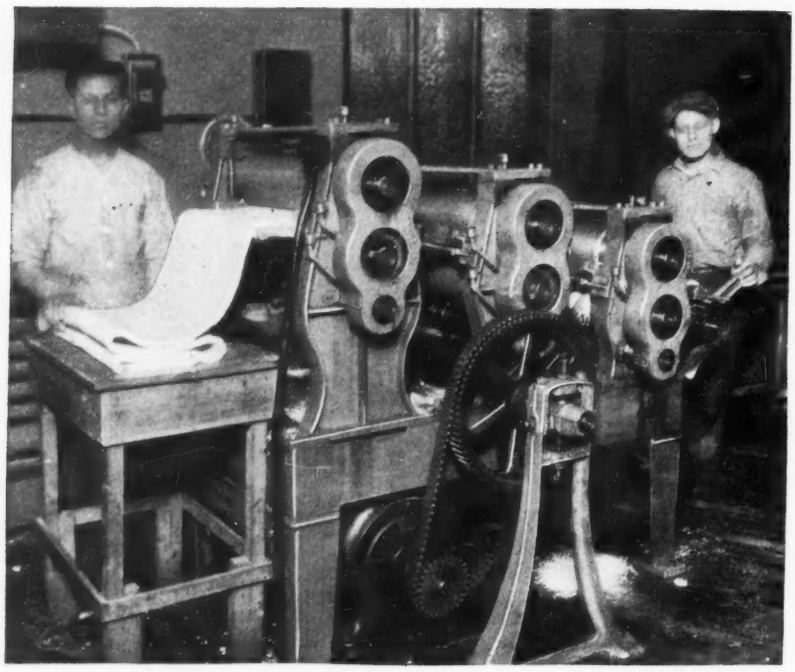
Fig. 8—A Creamery Package irradiator with perforated bottom doors thrown open. The circle of light comes from the burning arc lamp.

Irradiation was adopted to have something more to sell than merely good milk. The price situation was cleaned up very promptly.

Many food manufacturers in other lines are using vitamin D in various ways aggressively or defensively in something of a parallel manner. Irradiation of milk has been found to be a good commercial weapon, yet its cost must, of course, be reckoned with. On the power side, there is the cost of electricity; the power consumption is 3.1 kw. per hour in the C. P. unit. Then there are the carbons—Industrial "C" Carbons made by National Carbon Co.—which cost about 13 to 14c. per hour of use. This trifling direct cost amounts to about 20c. for 4,000 lb. of milk per hour, or about 0.01c. per quart irradiated.

But, license fees to the Wisconsin Alumni Research Foundation cost a minimum of $100 a month and in addition to the fees there is a royalty which is figured on the sliding scale from one-tenth of one cent per quart for 0 to 10,000 quarts per day down to

(Turn to page 368)



Dough breaker for rolling noodle dough, showing drive with guard removed. In this operation, jerks are caused by reversing the rolls.

Big Savings

By Eliminating Belt-Slip On Jerky Loads

By CHARLES DE NOVO
Chief Engineer, Chicago Macaroni Co. Chicago, Ill.

CHICAGO MACARONI CO. saves over $750 a year on seven kneader drives by substituting silent chains for belts. Chain drives on three macaroni shakers pay for themselves every three years by the savings they make possible. And there are several other chain-drive applications in this plant where very definite operating advantages have been realized. The following discussion will show in detail what has been accomplished and probably will suggest possible applications with corresponding savings to other manufacturers with power-transmission problems.

At the present time the Chicago Macaroni Co. has sixteen major chain drives as set forth in Table I and four minor drives which are not listed.

Macaroni Shaker Drives—Three of the four macaroni shakers in the plant were changed from belt to silent-chain drives because the jerking caused by the shaking arms made it necessary to keep the belts so tight that maintenance was both troublesome and costly. The fourth shaker is still driven by a belt, so that it is possible to make a direct comparison between the yearly costs of both kinds of drive for similar service, as shown in Table II.

The saving would be increased considerably if overhead were included. When expressed in production, a 5 per cent slippage would amount to 1,531,250 lb. per year for seven machines, or 98 days' work for one machine. In other words, if these machines were driven with a 5 per cent slip it would be necessary to run them fourteen days longer each year to give the production at present obtained in 280 days.

From this comparison it will be seen that although the first cost of a silent chain drive is about five times the first cost of a belt drive, it is very much more economical to operate, and pays for itself in three years.

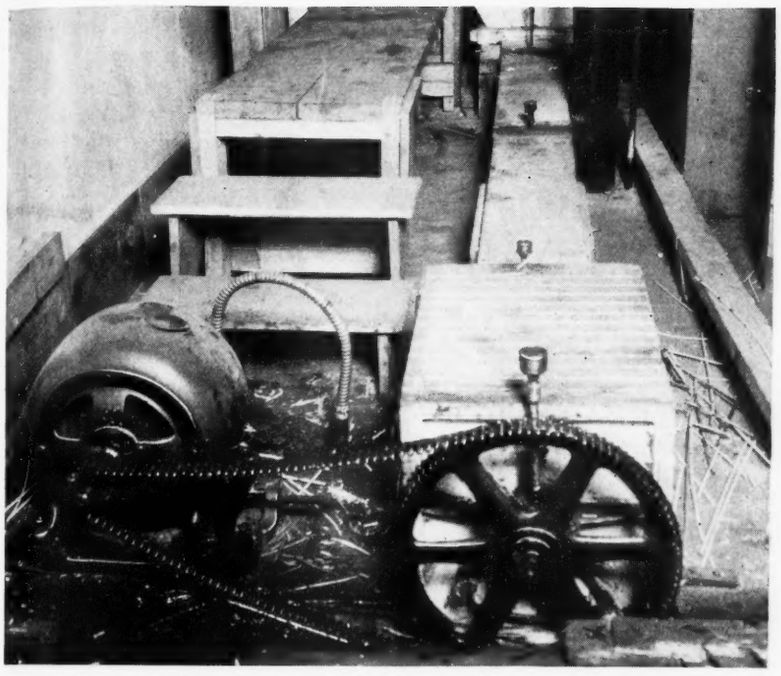
Flour Conveyor Drives—The six flour conveyors were equipped with chain drives for two principal reasons. The first was that there was not enough room for belts. The second was that, as these conveyors are started and stopped by means of pushbutton controls, the sudden starting frequently would throw a belt off the pulleys. Chain drive, of course, corrected this difficulty.

Dough Kneaders — The seven dough kneaders, together with mixers and macaroni machines, are part of the production process or line all of which must be perfectly timed or synchronized. That is, dough passes through the mixer, then through the kneader, and finally through the macaroni machine. Each unit must, of course, be timed with the units before it and after, and production is a continuous process. The necessary accuracy in synchronization is not practicable with belts because of slippage, but works out satisfactorily with silent chain drives.

Besides eliminating slippage the chain drives permit of the use of pushbutton control on each kneader, as explained in connection with the macaroni shakers, and it is also possible to stop the machine much more quickly than could be done with belt drives with their tendency to slip.

Slippage on these seven kneaders, which handle a firm and stiff dough, varies from 5 to 10 per cent when belt-driven. At 5 per cent the loss in direct labor and power for the seven machines would be as shown in Table III.

Dough Breaker—One of the less important drives not listed at the beginning of this article is on a dough-breaking machine which works a piece



One of the six flour-conveyor chain drives with guard removed. Sudden starting, always a factor where pushbutton control is used, would throw a belt off the pulley.

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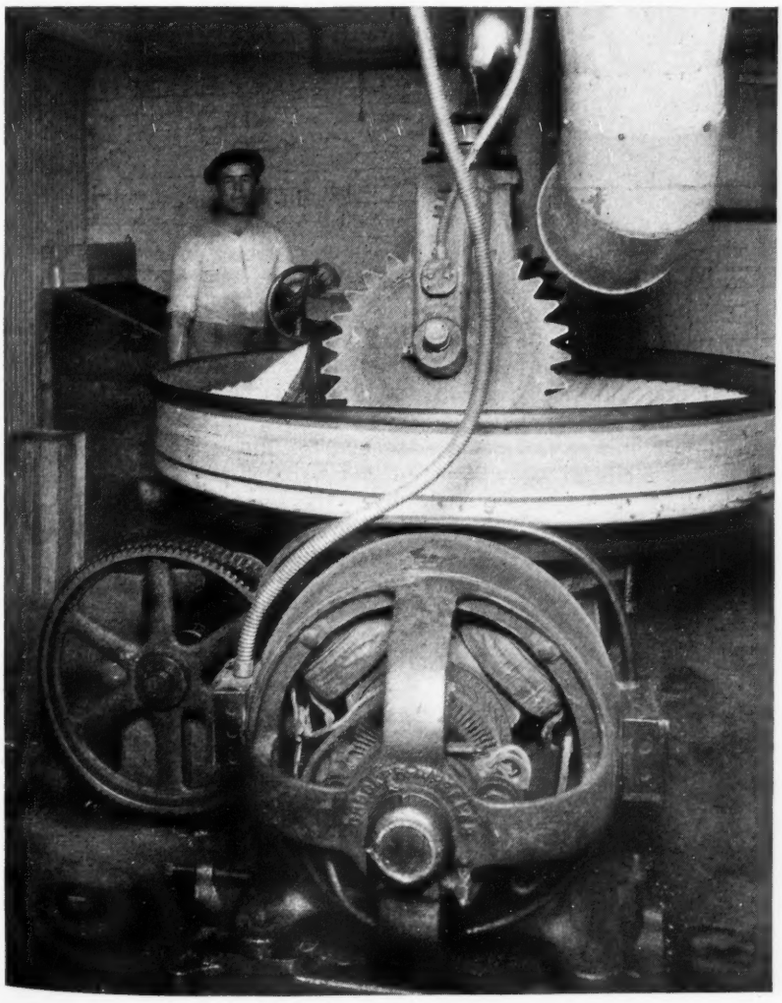
A dough kneader takes a 15-hp. motor. When belt-driven the slippage was from 5 to 10 per cent, which represented a loss of at least $750 a year. Chain drive eliminates this waste. (Guard removed during photographing.)



of dough 20 in. wide through rollers at heavy pressure, and is subjected to severe jerk when the rollers are reversed. This drive has been in service for eight years and has never been touched except for oiling. With the belt drive formerly used the reversing action was much more sluggish than proper, because of the slipping of the belts.

In this plant the elimination of slipping belts is, as has been seen, of particular importance. There is, however, enough slack in the chains to cushion sudden shocks which otherwise damage the machines under ordinary circumstances. At certain points, where a severe shock might be dangerous, the drive is provided either with a spring sprocket or shearing keys.

The only attention which these chains require is oiling once a week, and this can be done for the twenty drives by one man in two hours.

Acknowledgment is made to Link-Belt Co. for use of photographs.

TABLE I—Major Chain Drives in Plant of Chicago Macaroni Co.

	Macaroni Shakers	Flour Conveyors	Dough Kneaders
No. of drives	3	6	7
Motor hp.	5	2	10
Speed of motor, r.p.m.	950	1150	825
Speed of driven shaft, r.p.m.	150	215	195
Distance between centers, in.	33	24	16
No. of teeth in wheel	120	100	80
No. of teeth in pinion	19	17	19
Pitch of chain, in.	¼	¼	¼
Width of chain, in.	1½	1	¼
Length of chain	10′ 6″	6′ 10″	6′ 10″

TABLE II—Comparison of Costs of Operating Belt and Silent Chain Drives

Belt Drive	
12 ft. of 4-in. double leather belt at $1.15 per ft., $13.80. As this is good for only 8 months' service, the cost per year is	$20.70
Labor of putting in belt hooks	5.20
Lost time of machine operators while shaker belt is being repaired	3.47
Two boxes of belt hooks	4.50
Total	$33.87
Silent Chain Drive	
First cost, $73.62; depreciation per year for 15-year life	$4.91
Lubrication	2.73
Maintenance and repairs, negligible	.....
Total cost per year	$7.64
Saving per year, $33.87 — $7.64	$26.23

TABLE III—Losses Due to Belt Slippage

Annual direct labor cost—	
Average of 10½ men at $24 per week for 52 weeks	$13,104.00
Annual power cost—	
144,700 kw.-hr. at $0.015	2,170.50
	$15,274.50
Saving due to elimination of 5 per cent slip	$763.72

Where Does the Gas in Roasted Coffee Come From?

Inside information on the keeping quality of roasted and liquid coffees; the retention of the coffee flavor—one of the most elusive of flavors.

By CURT BREDT
President Straitway Coffee, Inc.
New York, N. Y.

PUNNETT AND EDDY[1], in their thorough investigation of the keeping qualities of roasted coffee correlate three factors: freshness, staleness and gas evolution. Presence of the first two factors was determined by taste. The gas production was measured by the usual laboratory methods.

As a result of their studies, these investigators concluded that the "freshness" of coffee decreases rapidly during the first nine days after roasting, with only a slight decrease thereafter. They also concluded that with the decrease in freshness there came into existence the factor "staleness," which rapidly increased in intensity as the coffee became less fresh. In the matter of gas production, their measurements indicated that by the ninth day after roasting the coffee had liberated 89 per cent of the total CO_2 and CO gases that it was capable of giving off. Consequently, Punnett and Eddy rightly state that there is a direct correlation between loss of gas and the increase in staleness and that the stale taste is due to oxidation of the coffee oils which takes place when the evolution of CO_2 becomes insufficient to keep oxygen away from these oils.

The reason for this evolution or production of CO_2 and CO gases is discussed in a very limited way in literature. Gould[2] believed the gas to be due to the decomposition during roasting of glucoside-like bodies which occur in the green bean. The results of the decomposition are: (1) formation of sucrose and a chemical radical which eventually becomes a fixed oil; (2) the breaking down of sucrose into a glucoside-like product, probably a caramel compound, which in turn decomposes to produce the gases which are given off by the coffee.

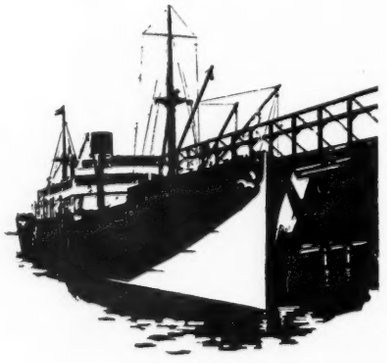
During the process of roasting, this decomposition may take place, but it certainly must cease when the roasting ends, because caramelization, or breaking down the glucoside-like substances, would not be likely to take place after the roasted coffee has cooled. There must be some other reason for the continuous evolution of the gases.

Carrasco[3] has two theories: (1) that the continuous giving off of CO_2 and other gases is due to the absorption of gases by activated carbon formed in the coffee bean during roasting; (2) that the gases formed during roasting are held under pressure in an almost infinite number of tiny cavities, the walls of which are caramelized substances held together by the cellular structure of the coffee bean.

The quantity of elemental carbon formed during roasting is much too small to come into serious consideration, and Carrasco himself gives more consideration to his second theory. That, too, is open to question, for, according to his own measurements, 1,000 grams of coffee under vacuum gave off 2,570 c.c. of gas. To imprison that quantity of gas in 1,000 grams of coffee, of which not more than 100 c.c. of gas-containing space would be available, a pressure of 25.7 atmospheres would be necessary at ordinary temperatures. Because theoretical imprisonment of these gases takes place under roasting temperatures, which would raise the pressure many times and would require cell walls strong enough to stand excessive pressures, such action obviously is impossible. The numerous cells embedded in the fibrous structure of the green bean contain the moisture and the water-soluble substances of the bean. As a portion of this moisture is evaporated during the process of roasting, it certainly must burst the walls of the cells.

Prescott[4] states: "Green beans soaked for three days in water at 37 deg. C. compared with a similar lot given the same treatment at 20 deg. C. showed an interesting result. On roasting and determining the CO_2, the first sample gave much lower results than the second, and both gave lower results than unsoaked roasted beans. Test of the water extracts showed that sugars and glucosides had been removed, but probably not completely."

I believe I have proved that caramelization after roasting cannot produce CO_2 gas and that a great quantity of gas cannot be developed during roasting and stored under terrific pressure in the cells of the



[1]FOOD INDUSTRIES, Vol. 2, Pp. 401-404 (September, 1930).

[2]*Eighth International Congress for Applied Chemistry*, Vol. 26, P. 389.

[3]*Food* (British), Vol. 2, P. 312, July, 1933.

[4]Report on an Investigation on Coffee, P. 70.

bean, to be liberated continuously over a period of several days.

We are now faced with the question: What chemical reaction produced by glucosides or reducing sugars can be responsible for the development of CO_2 after roasting? May not the polyamino acids of the coffee have a rôle in this CO_2 producing reaction?

Browne[5], in his article on the spontaneous decomposition of sugar-cane molasses, gives the reaction of amino acids with reducing sugars as one of the reasons for the molasses decomposition. Maillard[6] suggests the following as the first step in the reaction:

$$C_5H_{11}O_5 \cdot CHO + H_2NCH_2COOH \rightarrow C_5H_{11}O_5 \cdot CH : NCH_2COOH + H_2O$$

Glucose + glycocol → glucose-glycocol condensate + water

The instability of the glucose-glycocol condensate is supposed to lead next to a rupture of the –COOH group and the production of CO_2 and the formation of caramel-like substances.

$$C_5H_{11}O_5 \cdot CH : NCH_2COOH \rightarrow C_5H_{11}O_5 \cdot CH : NCH_3 + CO_2$$

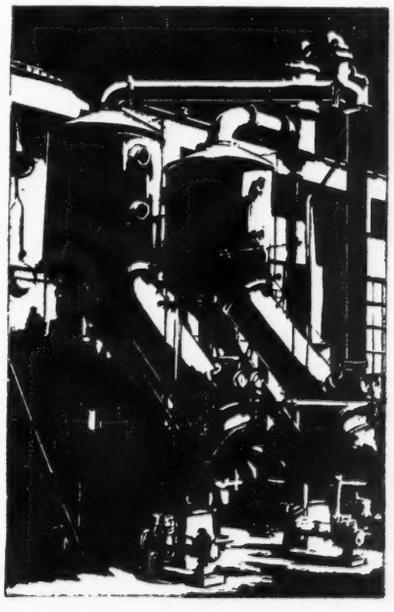
Similar reactions were found by Ripp[7] while investigating the action of glycocol, olanine, glutamic acid, aspartic acid and asparagin upon glucose and fructose.

There is no doubt that, during the roasting of the coffee bean, proteins and other polyamino acid compounds are split up and simple amino acids are produced. Prescott[8], describing the reactions taking place during the roasting of coffees, states: "Protein substances undergo changes, generally hydrolytic in character, resulting in partial cleavage."

These amino acids will react even after cooling with the reducing sugars present in the bean. The reason that this reaction is strongest and that the quantity of CO_2 gas developed is greatest immediately after roasting, when the roasted bean is cooling or has cooled, lies in the water present in the bean. During roasting, the water is in the form of steam and cannot dissolve the substances. After cooling and condensing back to water, the reaction begins; but the shortage of water prevents a quick complete reaction.

Prescott gives the percentage of water present in the roasted bean as 3.75, 6.45, 2.72, 6.03, 3.40, 6.92, 3.32 and 7.10, which figures give an average of about 5 per cent. Of protein he gives the following percentages: 12.93, 14.75, 11.69 and 9.75, these figures giving an average of about 12 per cent. In 100 grams of roasted coffee, 12 grams of proteins or amino acids is capable of reacting with the help of only 5 grams, or less, of water.

Maillard, in his experiment, uses 1 gram of glycocol with 3 to 4 c.c. of water and states at the end of his description of the reaction: "If a



little water should be added before complete desiccation, the evolution of gas continues for some time." Tiny drops of water from the condensed steam immediately start a strong reaction between the amino acids and the reducing sugars in the bean where they touch, but the intimate contact between the total quantity of the substances capable of reaction is very slow, because of lack of sufficient water.

If freshly ground roasted coffee beans are saturated with water, a very large quantity of CO_2 is given up almost immediately. The reaction is violent for about 10 minutes and is completely finished in about twelve hours if the added water be cold. With hot water, the reaction is much faster. The quantity of gas given up corresponds to the quantity given up voluntarily by dry roasted coffee in 30 days.

Punnett and Eddy show that on the ninth day 89 per cent of the CO_2 gas has escaped, while by their taste tests 65 per cent of the freshness of the coffee has disappeared. The relation between these facts is evidently mechanical. The strong current of CO_2 gas takes a great amount of the volatile aroma with it.

Gould states that it was observed that ground roasted coffee packed in a container exhausted to 183 mm. pressure gave off gas in sufficient quantity to overcome the vacuum and produce 253 mm. of additional pressure.

That is why the roasted coffee industry, trying to overcome the oxidation of the oils by vacuum packing, finds it necessary to wait a certain period of time after roasting to allow the first large quantity of CO_2 gas developed to escape. During this first violent production of CO_2 and CO gas, a great amount of the actual aroma, or freshness, also escapes. The later pumping out of the air and gases to produce a strong vacuum also diminishes the aroma, or freshness. When the consumer opens the vacuum-packed can later on, the air rushes into the cells made empty by vacuum and produces a quick oxidation, all the more rapid because at this point the development of CO_2 gas has almost ceased.

Other coffee roasters do not believe in vacuum-packing and see in quick and frequent delivery of the freshly roasted product to the shelves of the grocer the only solution of the problem of oil oxidation.

The liquid coffee industry, in its newly developed patented pressure process[9], saturates the roasted coffee with water immediately after roasting and washes the escaping CO_2 gases free from their aromatic contents. This treatment keeps the aroma in solution.

Punnett and Eddy state that approximately on the ninth day, when freshness has decreased 65 per cent and 90 per cent of the CO_2 gas has developed, staleness begins to appear and that this staleness rapidly increases after that day.

The staleness of coffee is due solely to the oxidation of the oils and fats contained in coffee. According to Noel[10], coffee oil consists of glycerin esters of palmitic (29 per cent), diaturic (2 per cent), carnaubic (14 per

[5] *Ind. Eng. Chem.*, Vol. 21, P. 600.
[6] *Ann. Chim.*, Vol. 5, P. 280 (1916).
[7] *Verein deutscher Zuckerindustrie*, Vol. 76, P. 627 (1926).
[8] Report on an Investigation on Coffee, P. 64, 8.
[9] U. S. Patent Application Serial No. 420,678 by Straitway Coffee, Inc., Keyport, N. J.
[10] *Pharm. Zentralhalle*, Vol. 70, Pp. 69-77 (1929).

(Turn to page 386)

Better Methods of Smoking

By C. W. SWENSON
New York, N. Y.

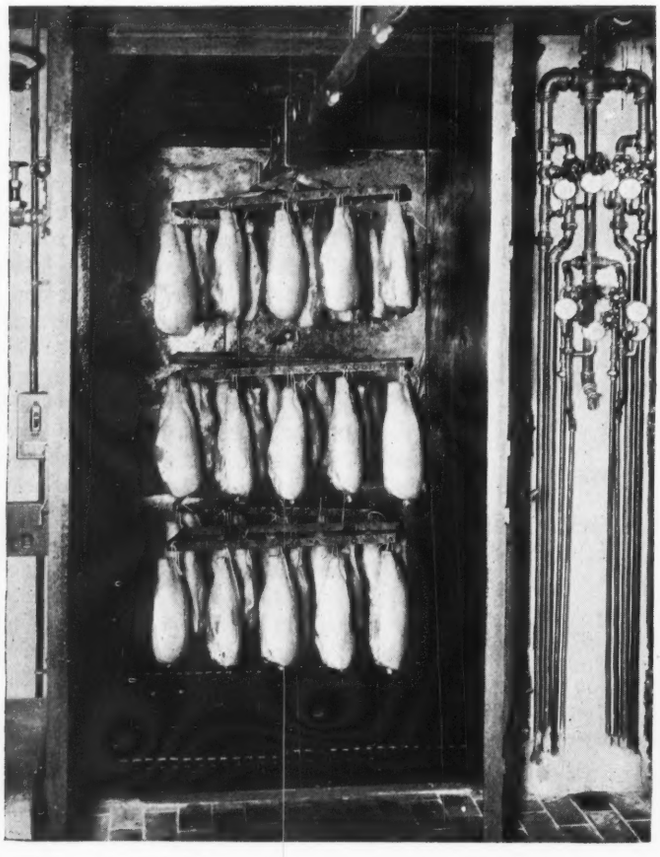
SMOKEHOUSES in the plant of Aleck Brooks, Inc.,* New York, formerly were fired with wood, sawdust being sprinkled over the fire to generate the smoke. Many of the smaller packing plants in the country still burn logs in their smokehouse firepits. But not Aleck Brooks, Inc. Tests made eight years ago indicated that gas was a better fuel and led the management to change to it. Subsequent years of operation with gas have borne out the predictions of the trial run, convincing the management that the $2,618 spent to convert its eight smokehouses to gas was a good investment.

Numerous elements influence the preference of Aleck Brooks, Inc., for gas. This packer finds convenience a big factor, but not as important to economic plant operation as the fact that the gas-fired smokehouse turns out products of better and more uniform quality. Nor is convenience more important than the increased volume of production which gas makes possible, an output of 50 per cent more being attainable with gas than with wood if things are kept moving. And not to be disregarded either are a small but welcome reduction in shrinkage with gas and a lower consumption of the hickory sawdust. To fire the smokehouses with gas costs Aleck Brooks, Inc., somewhat more than it did to heat them with wood, but that, it has been found, is of small import compared to the benefits realized in using gas.

Gas has many advantages when it is properly applied

The reason for the higher quality of the gas-smoked meat lies in the closeness with which the heat may be regulated, while the higher rate of smoking is due to the quickness with which the smokehouse can be brought to the desired temperature and to the steady maintenance of that tempera-

*This plant formerly was owned by Conron Bros.



Left . . . . HAMS READY FOR THE SMOKE in a double-deck, insulated, gas-fired smokehouse at the plant of Aleck Brooks, Inc.

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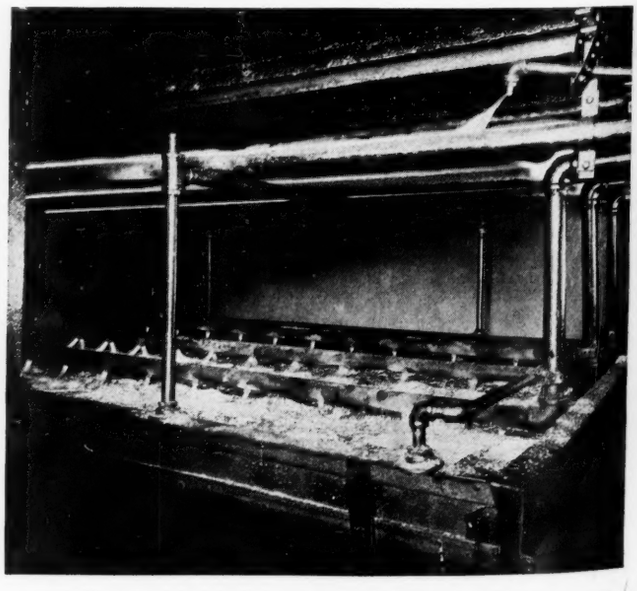
Below . . . . GAS BURNERS and sawdust pan in one of the smokehouses. The long burners at the top of the picture supply the heat, while those below ignite the sawdust; semi-round baffles protect the heating burners from drippings.



ture once it has been reached. To the even temperature also goes credit for the reduction in shrinkage. The other benefit of gas, smaller sawdust consumption, arises from the obviously higher efficiency of burning it with a gas flame as compared with spreading it on a wood fire. The tests that led to the adoption of gas in the Brooks plant provided some interesting data on shrinkage, smoking time, sawdust consumption and uniformity of temperature with gas as compared with wood. These data, collected over a period of ten days, are given in the accompanying table.

Test Data Show Advantages of Gas Over Wood as Smokehouse Fuel

	Wood Fuel 10 days	Gas Fuel 10 days
Duration of Test		
Amount of meat (lb.)		
Going in	31,146	53,343
Coming out	28,406	49,096
Shrinkage	2,740	4,247
Per cent shrinkage	8.8	7.96
Smoking time (hr.)	12 to 48	13 to 20
Gas used (cu.ft.)	19,010	48,000
Sawdust used	3,708	2,250
Average temp. (deg. F.)	110 to 140	140
Electricity (kw.hr.)		104.5

Aleck Brooks, Inc., like other meat packers, obtains best results in its smokehouses by dividing the smoking process into drying and smoking periods; the preliminary drying drives off the moisture imparted to pickled meat by soaking or washing and prevents this moisture from retarding the penetration of smoke. This two-step process makes gas especially desirable, for it affords close control, much closer than could possibly be obtained with wood.

There are, however, two difficulties that will be encountered in smoking with gas unless the burners be positioned properly — and here's where some users of gas go astray. In the smokehouses at the Aleck Brooks plant, the smoke is generated by burning the sawdust with a gas flame, the burners being mounted above the pan so that the flame burns downward to ignite the sawdust. This arrangement was adopted after another scheme had proved deficient. With the other arrangement, the burners were placed under the pan, and there was a tendency to drive off excess moisture before any smoking had occurred. This created a condition of high humidity which retarded the initial drying of the meat and delayed smoking; under these conditions gas did not compare as favorably as it should with wood as a smokehouse fuel. The other difficulty to be avoided is overheating when the sawdust is ignited. This too will be minimized when the burners are placed above the sawdust pan, and if the quantity of gas supplied to the sawdust burners be kept low, no trouble will be experienced.

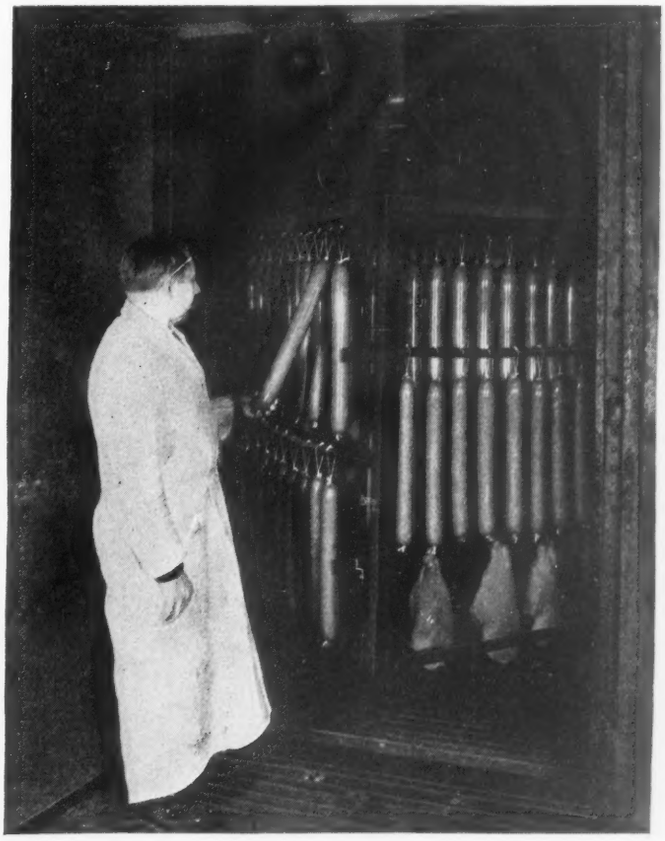
Two types of burners are employed in these gas-fired smokehouses: one to produce heat and the other to ignite the sawdust. The heating burners consist of four "high-pressure" ribbon burners spaced evenly across the chamber and above the large steel pan that accommodates the sawdust. These burners are $1\frac{1}{2}$ in. in diameter with jets extending along the top side for a length of 9 ft.; heavy-gage sheet-iron baffles over them prevent drippings from carbonizing on the openings, semi-round baffles being most effective. The sawdust burners are directly below and consist of $\frac{3}{8}$-in. screen tips spaced along a $1\frac{1}{4}$-in. pipe. There are three of these burners, the center one having a double row of tips.

If the meat packer deems it advantageous to eliminate the element of human error and secure extremely accurate control of smokehouse temperatures, this may be effected through heat regulators connected to the heating burners. Such control not only improves temperature regulation but it frees the smokehouse supervisor from one of his big worries and gives more times for routine duties.

As to the quantity of gas required

(Turn to page 355)

Right . . . . INSPECTING BOLOGNA being smoked in a gas-fired, revolving-track smokehouse at Sunrise Packing Corp. With smokehouses of this type, it is not necessary to open the doors at intervals to turn the cage.



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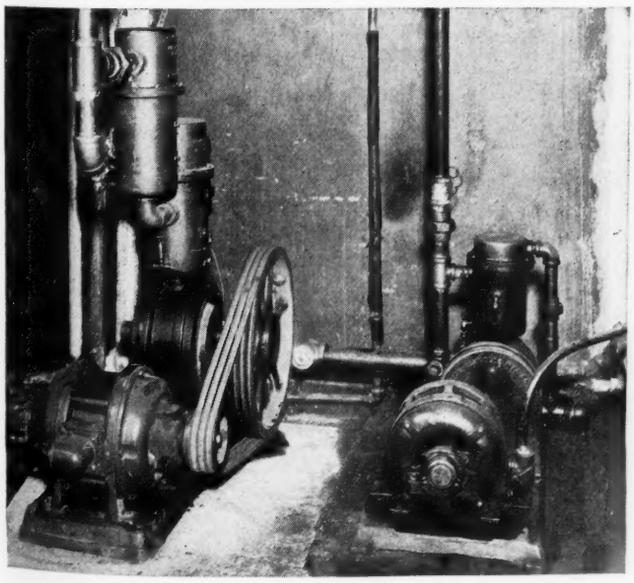
Below . . . . ROTARY COMPRESSORS which supply gas to the burners in the Aleck Brooks, Inc., smokehouses at a pressure of 4 lb. per square inch.



Full-Glued Labeling

Successor to *Wet Labeling*

But Moisture Is Eliminated

PART II

Continued from Page 304 July Food Industries

FULL-GLUED labeling of friction-top tin cans, producing a finished appearance identical with that of the hand-labeled job carried out by the wet method described in Part I of this article, can be done on labeling machines with considerably less labor cost.

Procedure in full-glued labeling is quite different from the usual method of lap-paste labeling of packers' cans, as done on the type of labeling machine that is found in every canning plant. Furthermore, full-glued labeling differs from manual wet labeling in the very important feature that labels and packages are dry, and are kept dry.

Machine labeling by the lap-pasting method rolls the packers' cans down a track where they pass over a row of small wheels and receive a few dabs of pick-up gum or glue. Their next revolution brings the glue spots down on the front end of a pile of inverted labels. The tacky glue lifts one label from the pile, begins to wrap it around the can, and, as it drags the far end of the label from the pile, automatically pastes the lap end. Another revolution over a soft pad smooths the label tightly around the can and presses down the pasted lap end, thus completing the job. The characteristic of this form of labeling is that the label is attached to the can only at the spots of pick-up glue. Elsewhere it is loose in the sense that it is not stuck to the can, although the fit is very snug.

In full-glued labeling of cans by the machine method, with the exception of two machines no longer available to users, the labels are dry at the outset, but there is little else that is comparable. To insure continuous adhesion of the label to the can at all points, either the can body must be coated with a thin layer of glue or else the back side of the label itself must be so coated.

The Model "U" labeler (Figs. 1 and 8) made by the Burt Machine Co., coats the body of the can with glue. Made in two types, one—the "U-H"—handles the can in horizontal position, while the other—the "U"—does the job in a position slightly tilted from the vertical. Both machines operate on the same principle, though handling

Fig. 1—Labeling with Burt Model U labeler which tilts the cans at a slight angle from the vertical as they roll against paste rolls and labels and prevents sifting from cans containing dry powder.

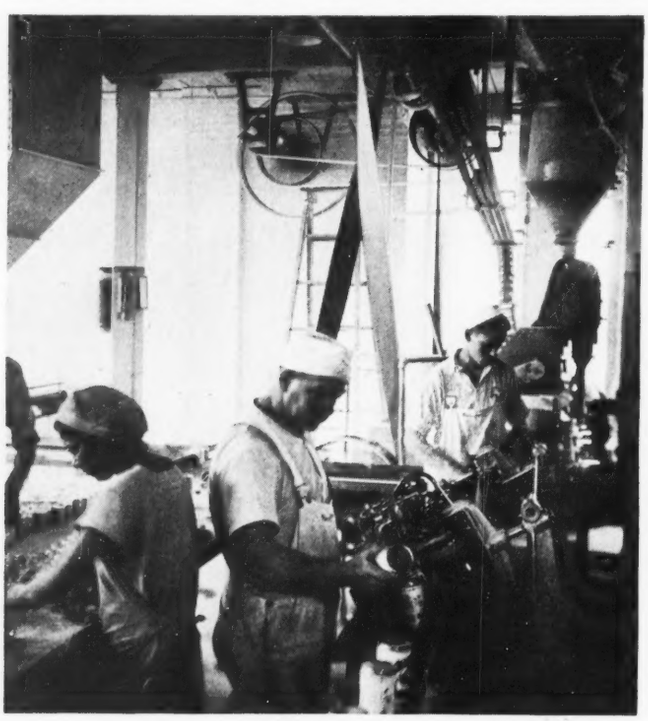
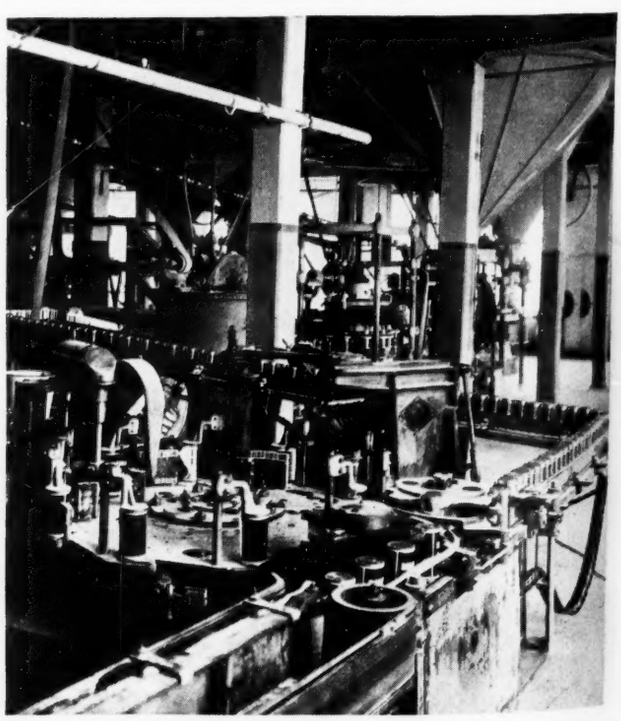


Fig. 2—Full-glued labeling with an O. & J. labeler. Rumford runs the labeled can through a dryer before casing as an added precaution, even though the dryer treatment is not imperative.



● When seeking the proper nomenclature for the modern mechanized outgrowth from the hand-labeling job described in July, one is confronted with an amazing variety of terms. Practically everyone who has been consulted has stressed the complete severance of all the family ties which relate the latest forms of labeling equipment to their industrial ancestor: "Wet labeling."

● In short, mechanized labeling, with the label glued to the container at all points, has become as thoroughly dry as the drought States in May, 1934. Such suggested names, as "dry labeling," "tight labeling," "all-over-glued labeling," "shrunk-on labeling" and just plain "labeling," permit a considerable latitude of choice. And so the term "full-glued labeling" has been tentatively selected because it more accurately describes the final results of the operation. Somebody doubtless will think of a better term, the principle of which is comparable to a better known term, "tight wrapping."

● Necessarily, in so brief a discussion, only the broad principles of a specialized group of labeling machines is discussed. Details of operation of individual machines are left for the future.

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the can in different positions. The Model "U" machine was designed primarily to take care of friction-top cans containing a powder which might sift out, get into the paste and interfere with the labeling operation were the can rolled in a horizontal position. If the can is upright, this possibility of sifting is avoided.

Since only the can body itself is coated with glue, the lap end of the label is pasted with lap paste by a paste belt in much the same manner as it is accomplished on the Burt Model "A" machine for lap-paste labeling of packers' cans.

The O.&J. labeler, shown in Figs. 2 and 5, glues the label first, then lifts it off the pile in the label holder, a pair of label pickers doing the job, and holds it in a vertical position in the path of the oncoming cans. The latter sweeps it from the pickers and moves it past two successive rotary label wipers which wrap the label completely around the can at all points.

Inasmuch as the label has been glued, there is no lap-pasting. After the labeled container leaves the discharge turret, the can passes through a belt wiper, seen in the foreground of Fig. 2. Here the operation is completed and the can emerges with the label drawn taut and stuck to the can at all points.

Pneumatic Scale Co. has a labeler for this type of job which operates on the following principle: The can is first glued and the label is then advanced from the label magazine, and deposited on the sticky surface. Next it is wiped onto the can, thus completing the operation.

Exceptions to these principles of operation in tight labeling for cans are found in two machines. One which was formerly made by a Mr. Phillips, of Arkansas, drew the labels on piano-wire belts through a tank of water to soak them, and then passed them over the pasting rolls, and finally applied the pasted label to the can. This machine was originally used by Calumet Baking Powder Co. It had a speed of about 25 one-pound cans per minutes, and required subsequent artificial drying in the manner hereafter described for drying hand wet-labeled cans. Proctor & Schwartz dryers were used.

In the other, the Pneumatic Scale

Fig. 3—Detail of the discharge end of one of the dryers with two guide belts to bunch the cans onto the narrower conveyor.

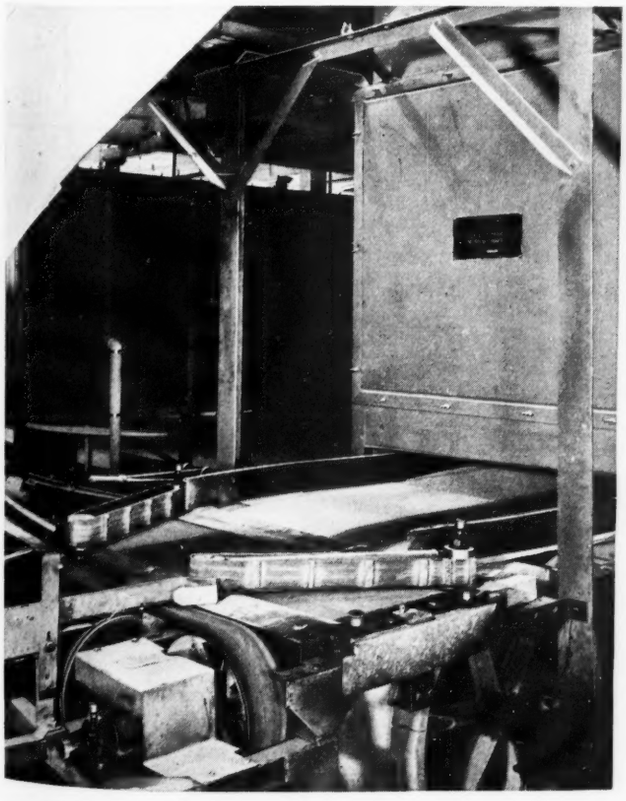
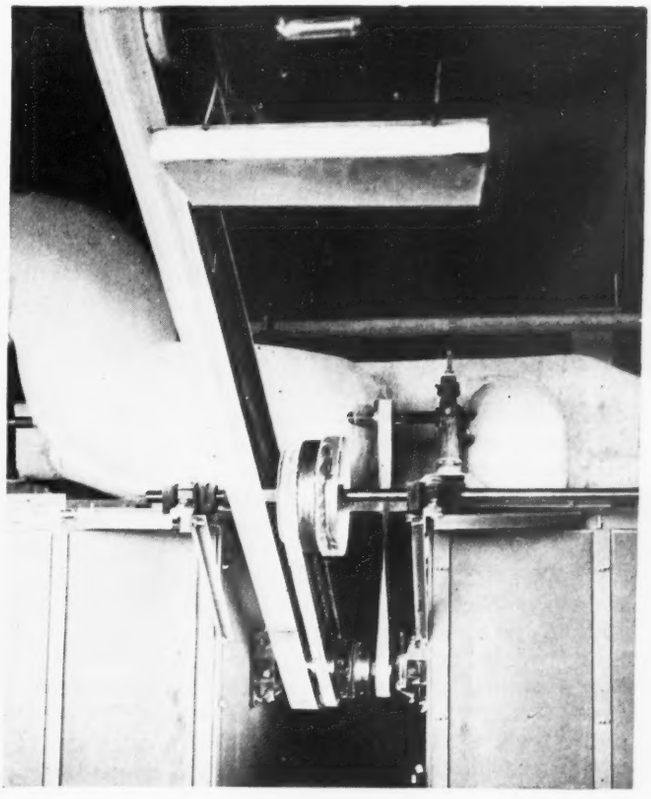


Fig. 4—Outlet of dryers for separate removal of moist air from both drying compartments of the Proctor & Schwartz unit.



Co. wet labeler, the principle is the same. The label is subjected to a hot water bath to stretch it to the utmost, the surplus water is wrung out on its emergence from the tank, the label is pasted on its unprinted side, applied to the can and finally with its wet pasted label it is dried in a heated dryer. These machines are still found in use on round canisters of salt and round slip-cover cans. With respect to cans, there is a present tendency in the trade to substitute a lithographed surface for a labeled surface and in the case of salt canisters the trend is toward the use of the Burt or Knapp type of lap-paste labeler. Hence this wet labeler is becoming obsolete for this particular service, although in certain specific instances it will be the only type of labeling done because of the unique advantages of bona fide wet labeling.

Both these "exception" labeling machines are to be regarded as transitional developments in the evolution from wet labeling by hand to full-glued labeling by machine.

Special Tight Labeling Glues

Efforts of labeling-machine builders to attain dry or "full-glued" "tight" labeling have led to the development of special glues that are only momentarily tacky. This end has been sought so that packages and cartons which must be kept dry will not be dampened, although, where the container is tin, no moisture problem is involved.

Some of these glues can be made so quick-setting that they are not sufficiently tacky in an exceptionally dry atmosphere, such as occurs on a very cold winter's day. To increase the tackiness under such conditions, some food manufacturers add extremely small quantities of glycerin or sulphonated oil to the glue. (Canners solved the comparable problem of too quick-setting pick-up glue or cold cans by adding vaseline to increase the tackiness and rosin to decrease it.)

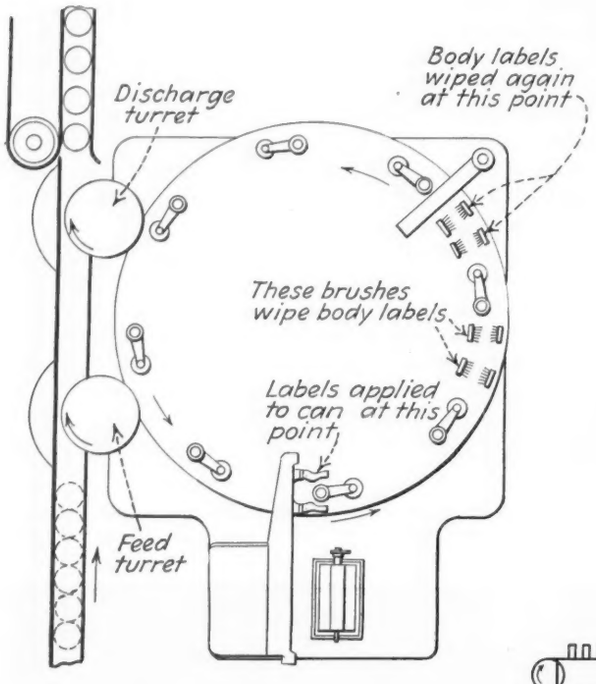

Discharge turret
Body labels wiped again at this point
These brushes wipe body labels
Labels applied to can at this point
Feed turret

Fig. 5—Method of applying and wiping full-glued labels on the O. & J. labeler.

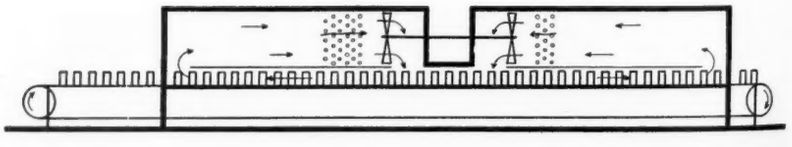


Fig. 6 — Diagram of air flow in Proctor & Schwartz dryer as used in Rumford Chemical Works. Note that drying is accomplished in two stages and air is recirculated in both compartments. (See Fig. 4 for moist air outlet.)

Drying the Labels

Cans bearing wet labels applied by hand must be thoroughly dried before placing them in cases, as was pointed out in the July instalment of this article. This moisture is best removed by controlled artificial drying. It is possible, though seldom practical, to employ natural drying if the take-away conveyors are long enough and the atmosphere is dry enough to permit the necessary evaporation.

At Rumford Chemical Works, both hand and machine labeling are employed, but in the older days only hand wet labeling was done. This condition required the use of dryers on all labeling lines. Proctor & Schwartz dryers, shown in Figs. 3 and 9, were installed. Although artificial drying is a continual necessity only for hand-labeled goods, the dryers are in constant service for all classes of work as a further precaution to obtain a de luxe job of perfect labeling. This, in spite of the fact that in periods of ordinary humidity artificial drying is not needed for machine labeled goods.

Heat Requirements Vary

Because there is a very considerable difference in the quantity of moisture to be evaporated from labels of cans labeled by hand and by machine, the heat input required by the drying operation differs considerably. Exhaust steam in the drying coils at very low pressures is used at Rumford Chemical Works as the source of heat when the labels are applied by machine, for here there is only a very trifling quantity of moisture to be evaporated. But when the cans have been labeled by the hand method, with saturated labels, the quantity of moisture to be evaporated is so great that it necessitates the use of live steam to heat the dryers.

The rate of travel through the dryers at the Rumford plant depends upon the type of labeling machine or labeling operation which the dryer serves. A 10-minute drying interval is used in one of them, while the others utilize 15- and 20-minute intervals.

When originally designed these dryers called for complete drying of labels on 100 one-pound cans per minute with full-soaked labels, those put on by the hand method. These cans are 3-5 in. tall. However, since the dryers were installed, machine labeling has come into use, and because of the insignificant moisture content in machine-applied labels, the conveyor belts can be run at three times the original speed. Where only machine labeling is done, the time of passage through the dryer is only 6 minutes.

For machine-labeled cans a drying temperature of only 140 deg. F. is used at Rumford, whereas full-soaked labels require a drying temperature of about 210 deg. F.

Labels on slip-cover cans emerging from the dryers, by whatever method they are applied, are so tightly shrunk that, despite the absence of a top protecting rim, the ordinary handling of the cans in packing into shipping con-

Fig. 7—Ramming paper packing into space between wet labeled cans for an export shipment. If labels were damp they could not stand such severe treatment; but when thoroughly dried, not so much as an edge is turned over.

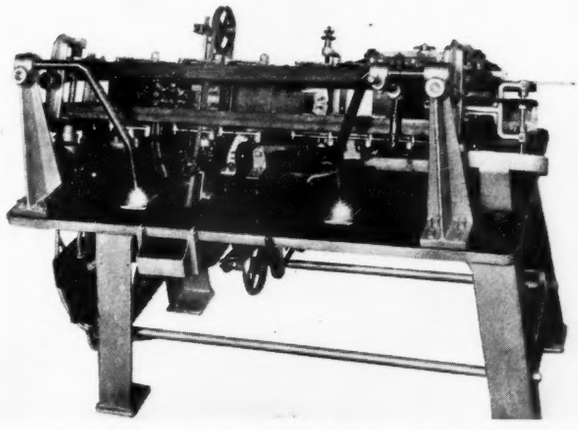


Fig. 8—Side view of Burt Model U labeler.

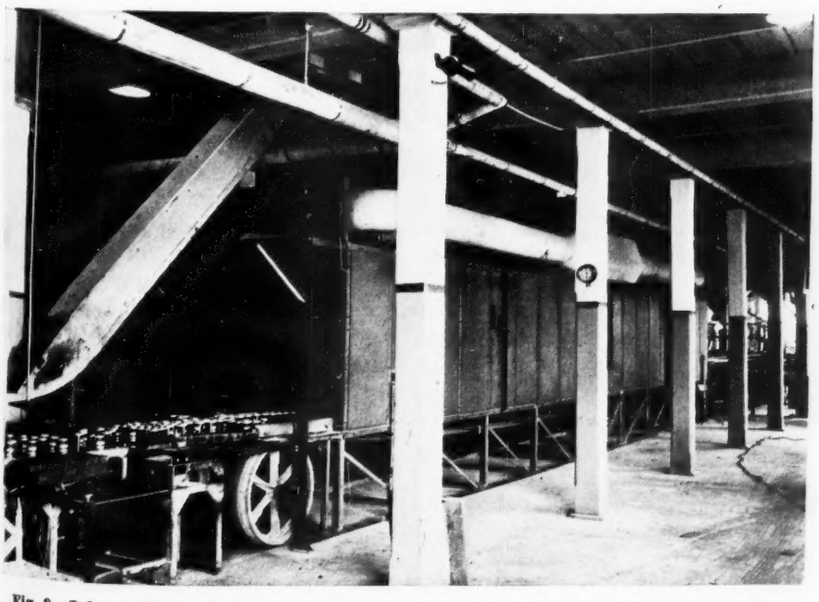


Fig. 9—Inlet end of one of the Proctor & Schwartz dryers used to insure perfection in Rumford labeling operation. If no dryer is used, the take-away conveyor would have to be considerably longer in order to permit natural evaporation of the moisture acquired by the label from the paste or glue. Local weather conditions govern this need to some extent. This plant is located quite near to the ocean.

tainers does not scuff or dislodge the labels. Fig. 7 shows the kind of treatment wet-labeled and full-glued-labeled cans may receive without injuring the label in any way.

It is a pleasure to acknowledge the aid and cooperation of Ellery L. Wilson, vice-president of Rumford Chemical Works, the several labeling machine manufacturers, and the adhesive manufacturers with whom we have conferred in collecting material for this discussion of the principles of full-glued labeling.

Better Methods of Smoking

(Concluded from page 351)

to smoke meat, an accurate indicator is given in the table, 48,000 cu.ft. being burned in smoking 53,343 lb. The total rated gas consumption of the smokehouses tested amounted to 480 cu.ft. per hour; these houses are double-decked structures measuring 8 ft. 3 in. wide, 11 ft. 3 in. deep and 7 ft. 7 in. high. The smoking compartments are of insulated, hollow tile and are equipped with close-fitting iron doors.

To convert a smokehouse to gas presents no particular problem and involves no great expense. The equipment to be installed consists of the two types of burners, a sawdust pan, the necessary gages and controls, and a compressor, the latter to supply gas to the burners at a pressure of about 4 lb. per square inch.

Some packers using gas, especially the smaller plants, have found the insulated-steel smokehouse with the revolving track quite efficient. This is true of Sunrise Packing Corp., New York, N. Y., to take one example. This company reports a 20 per cent reduction in its smokehouse gas bill since it installed two of these units four years ago. It also has experienced an appreciable saving in shrinkage and more uniform smoking. There has been a saving in labor, too.

The advantage of this type of smokehouse over the ordinary gas-fired unit may be attributed to the revolving track which makes it unnecessary to open the doors to turn the cage. Not only does manual manipulation of the cage take time and labor but it cools the smokehouse, thereby increasing fuel consumption and delaying the smoking operation itself. This intermittent cooling action indirectly affects shrinkage, also, for it necessitates a higher temperature to compensate.

In Chicago the principal wholesale houses are located alongside the Chicago River.

Hudson Street, New York, at Seeman Brothers, several blocks north of the brokerage center.

The Broker Becomes a Service Broker

As Changing Methods of Distribution Make New Demands on Him

By ROBERT G. MOORE
Moore & Chase,
San Francisco

QUITE A FEW in the past have stated that the jobber and the broker were on their way out of the merchandising picture. It is true that the large manufacturer has, chiefly through advertising, taken over much of the sales burden he once delegated to his wholesale and retail representatives in the field. But the jobber and the wholesaler still perform yeoman service in warehousing the manufacturer's goods, carrying his accounts and delivering promptly in small amounts whatever is desired by the individual retailer.

In the offices of a large advertising agency, the other day, someone remarked that, in his opinion, only one of the agency's large food accounts knew how to get the utmost of value from its brokerage connections. Many manufacturers will find a little thought spent on this phase of merchandising well worth while. Many gaps on the merchandising front remain, however, which the manufacturer who advertises can fill only by greatly expanding his own organization or through the use of a merchandise broker. There is specialty work to be done, and displays and demonstrations are to be encouraged and supervised as well as countless other things without which no selling campaign can be a complete success.

The merchandise broker has ceased to be just a broker and has become a sales promoter in the truest and broadest sense of the word. As a matter of fact, with increasing frequency, the expression "merchandise broker" is being dropped in favor of "service broker"—a term which is more descriptive and applies better to his many functions. And let those who consider him a passing phase reflect that, in a territory as old and as easily covered as New England, the bulk of the food business is now done through such brokers.

The merchandise broker's organization is primarily an experienced sales force ready-made and available to manufacturers whose products warrant distribution. His first duty, of course, is to obtain placement.

If an article is not obtainable in the stores, of what avail is its quality and of what advantage is public demand created by means of advertising? If a hundred thousand potential customers are finally brought through advertising to the point where they would like to try "Snappy Syrup," and they have to go to an average of three different stores before they find it in stock, at least seventy-five thousand of them will fall back on "Sunny Syrup" or whatever brand they have always used in the past.

So the first function of a merchandise broker is to sell the retail trade. In doing this he has an audience and a prestige which the single-item salesman seldom obtains. He is in close and constant touch with the retailer on not one item, but on several items, and knows where an article can be best introduced for test purposes and through which channels one may expect the strongest retail support. He knows where most effectively to spot cooperative advertising, if it is being used. In the course of his regular sales work he is in a position to bring up time and time again some one article he is introducing and do so without wearing out his welcome.

A good merchandise broker, how-

ever, should also be an experienced merchandise investigator. If goods are not moving he should know something about the reason why. He cannot know this without having valuable suggestions to offer.

Philosophers tell us that there is no such thing as innate conscious knowledge—that we know only what we have observed, experienced or been told. The merchandise broker is in a position to observe. He sees not one piece of merchandise and one merchandising method, but many of them, in operation at the same time, so that he has a broad basis for comparison and he should have a background of wide experience.

The public may be logical or illogical, or have minds as unaccountably formed as pretzels. How it is reacting to definite arguments, displays, or advertising is the important consideration, and all reasoning on the subject is nothing but a parlor game unless it is followed up by first-hand observation. The merchandise broker tells what the public wants by watching people buy, and he tells how prospective customers respond to particular merchandising efforts by watching them respond.

I mentioned one manufacturer out of many who made a point of utilizing his brokers as fully as possible. That particular account never enters upon a merchandising campaign without first calling on all its brokers for suggestions. With these suggestions on hand the company formulates its plans. It then turns its attention to selling these completed plans to each of its brokers in their respective territories. What cannot be sold, the company does not attempt to use. Thus, even if company officials in charge of a sales campaign accomplish nothing else, they make the merchandise broker an integral part of the campaign and to a large extent responsible for its success or failure.

A manufacturer, however, may have one hundred per cent placement and an excellent merchandising campaign in full swing, and yet its complete effectiveness may be destroyed by a failure to follow-up properly in the field. To illustrate my point, let us follow for a little while the question form of argument.

When does the deciding stimulus to buy generally come to persons who hear or read about an article of merchandise? When they are reading the advertisement or listening to the broadcast, or is it when they see in their favorite store an attractive display of the article about which they have previously read or heard?

How much of the effectiveness of all advertising is lost through not having the goods properly shown in the stores at the time the story is being told? How much through having inadequate supplies in the hands of dealers? How much through not arousing sufficient interest on the part of the dealer in what is being done in his behalf to win his co-operation.

If a store has a telephone clientele, are the telephone girls cooperating with suggestions to customers that the store is now stocking and recommending the article? Is the girl or man behind the counter interested in and acquainted with what is going on?

Are the demonstrations and specialty work properly supervised? Are all other details of the campaign on the merchandising front being intelligently carried out? In how close and quick contact is the manufacturer with the consumer's reactions?

A merchandise broker should be able to answer all of those questions and assume all of these responsibilities. The foregoing is only a brief outline of some of the many functions of the merchandise broker. He does all of this for a straight and rather small percentage on the goods sold in a given territory which he covers. His cost can be figured to the last penny in the unit cost of selling. If a manufacturer can increase sales without increasing his cost per unit sale he is interested. If he can increase his sales and at the same time reduce his sales cost per unit he is aggressively desirous of obtaining the information. At any rate, everyone interested in merchandising should give a little more thought to the merchandise broker.

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Only one of the big food accounts of a certain large advertising agency knows how to get the utmost of value from its brokerage connections, according to the comment recently made by one of the agency members. Many a manufacturer will find it profitable to ponder that remark.

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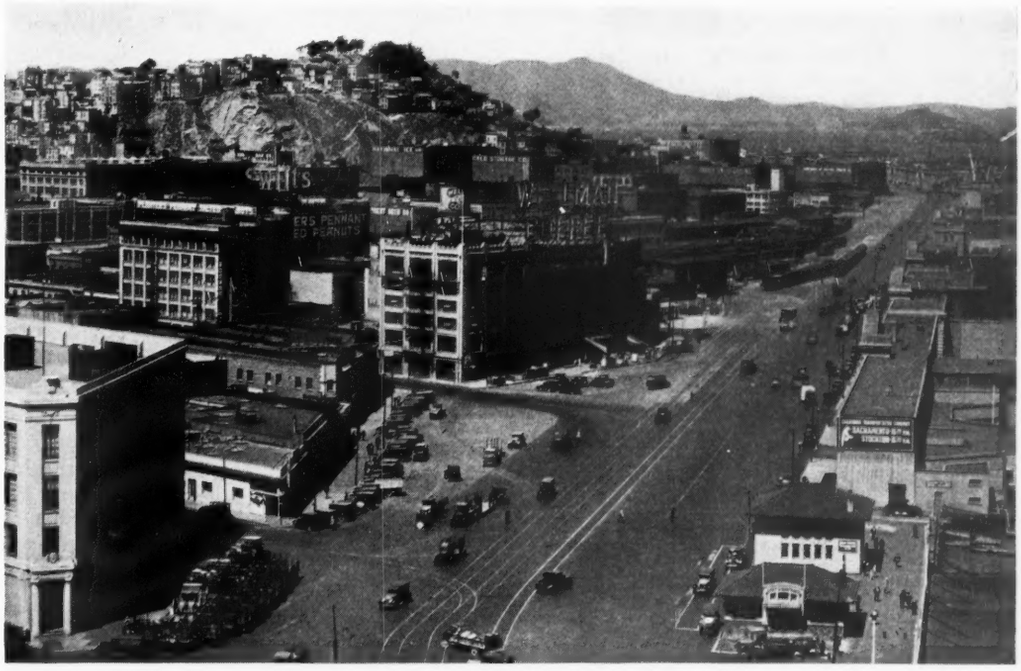


San Francisco's Embarcadero, with docks on one side and wholesale establishments opposite.

Tradition Suffers When Grocery Stores Sell Beer

By W. B. LINCOLN, Jr.
Development Engineer
Inland Container Corp.
Indianapolis, Ind.

• The traditional wooden beer case finds corrugated paper cases taking the honors in meeting the home market demand

WITH the sale of beer to the consumer through retail grocery stores more thought is being given to its shipping container than was done prior to prohibition, when the familiar wooden case was universally used for bottled beer.

Although a container is primarily a convenience for the handling of a product, its advertising or good-will promoting value should not be overlooked. Also there is a further potentiality for protection of the product aside from that of breakage. In the instance of bottled beer, protection against a rise in temperature is important to those who wish to serve chilled beer at a picnic or some such gathering where ice or other refrigerating agent would be either unobtainable or a nuisance.

Chart I graphically presents some results obtained from tests made on chilled bottled beer under the direction of J. D. Malcolmson, development engineer, Robert Gair Co. The container was a double-walled corrugated tube and slide style box, and the temperatures were determined by a Leeds & Northrup potentiometer connected to thermocouple wires inserted to the center of the large part of the bottles and the bottles sealed with corks.

The advertising and good-will promoting value of corrugated-paper containers is best seen in retail stores where direct appeal must be made to the home market and where displays of beer are exhibits in shipping containers of which the greater number is made of corrugated paper. These displays get attention because of the eye-appeal of the corrugated container itself and because of the decorative use made of the large display space on its exterior.

Although there is a tendency to use corrugated cases in mass displays of other kinds of merchandise, the practice is particularly marked in the instance of mass displays of beer. A wooden case of the usual type as the center of a mass display of beer is not easy to visualize. Its composition and construction invite all kinds of abuse which may make it dirty, odorous and unsanitary and, for those and other reasons hardly suited to supplying the present-day home market.

Not always is full advantage taken of the possibilities that the corrugated carton offers, for too often the attractively printed shipping container is regarded like the wooden beer case—solely as a conveyor of merchandise—while its value as an advertising medium is ignored. An example is found in a brewer who packs 3,000,000 cases of beer annually in corrugated cases which have 12,000,000 sq.ft. of clean, bright display space on the ends and sides of the containers. Assuming an effective display life of only one day for each case, the brewer has 40,000 sq.ft. of space, worth $40,000 per year at the average rate for billboard advertising. This represents a value of $13 per thousand cases.

In addition to these merchandising advantages, corrugated cases offer several important cost economies which are of interest not only to the brewer but also to the dealer and distributor. These economies are pointed out in Table I, which data give the corrugated beer containers a decidedly favorable rating. The possible reduction in space and weight obtained through the use of corrugated containers is startling. A 1,000-cu.ft. pile of corrugated cases, stacked about 6 ft. high would require 167 sq.ft. of floor space, which, at 25c. per sq.ft. per year, would cost $41.75. Based on the number of wooden cases it is possible to store in an equivalent space, one can see that storage space costs $70.60 per thousand wooden cases per year and $45.75 per thousand corrugated cases per year. Thus, by using corrugated cases, storage costs alone may be reduced $24.85 per thousand cases per year.

Corrugated paper beer cases stacked side by side with an equal number of wooden beer cases give unmistakable evidence of a marked saving in weight and floor-space requirements.

One brewery handling 3,000,000 cases per year began using corrugated containers and found that it could release 20,000 sq.ft. of storage space required for the storage of extra empty wooden cases. This space at 25c. per sq.ft. per year represents a saving of $5,000. In addition, the labor for placing and removing wooden cases from this storage area was saved. Spread over 3,000,000 cases, this saving was $1.67 per thousand cases.

As corrugated cases need not be ordered until required for use, the problem of inventory and storage space for empty cases is fully solved. Whatever empty cases it is necessary to keep on hand occupy very little space in their knocked-down condition. As many as 4,170 knocked-down corrugated containers can be stored in 1,000 cu.ft. of space, compared with 590 standard 24-bottle wooden cases.

The substantial reduction in weight

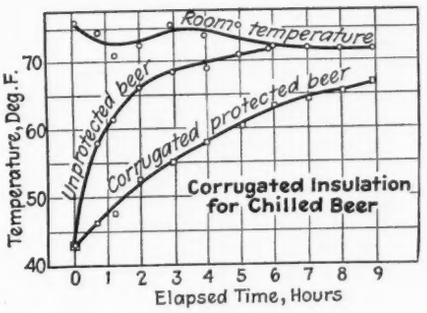


CHART I—Temperature Change in Chilled Bottled Beer

resulting from the use of corrugated containers effects a corresponding reduction in freight costs, as shown in Table II. The computed savings are rather conservative, for the weight savings used are the minimum to be expected, as Table III shows. The saving in freight computed in Table II would be practically doubled for most of the firms listed in Table III.

Corrugated paper cases are new in the brewing industry, with the result that an erroneous belief has prevailed that their cost was prohibitive. Table IV shows that a brewer making shipment, in even a small radius, can actually save money through the use of corrugated rather than wood, when full consideration is given all factors influencing the comparative cost of using the two types of cases.

In making this comparison no credit has been taken for corrugated's merchandising value and the good will created among the consuming public by its use. Even in instances where brewers are supplying only local markets and the savings due to reduced transportation charges are much lower than those shown in Table IV, the many advantages of corrugated-paper containers will outweigh the small price handicap, and for that reason bottled beer packed in cartons predominates in the grocery-store market.

TABLE I—Comparison of Beer-Case Weight and Floor-Space Requirements

Weight	24-Bottle Wood Case	24-Bottle Corrugated Case
Weight of case of empties	33.0 lb.	23.0 lb.
Increase over weight of corrugated	43.5%	.....
Weight case of filled beer	51.5 lb.	41.5 lb.
Increase over weight of corrugated	24.0%	.....
Dimensions		
Outside dimensions	20x13x11¼	16¾x11¾x10
Cu.in. displacement	2925	1905
Cu.ft. per M cases of 24 bottles each	1695	1100
Increase over volume of corrugated	53.54%	.....
Number cases per M sq.ft.	590	910
Increase in corrugated cases possible to store in given volume of space	54.24%	.....
Dimensions of Knocked-Down Containers[1]		
Cu.ft. per M cases	1695	240
Additional space required for storage of wood cases	606.25%	.....
Number cases which can be stored in M cu.ft. space	590	4170

[1]Wood cannot be knocked down.

TABLE II—Freight Savings Resulting from Use of Corrugated Containers

Weight saved per case in pounds	10
Weight saved per M cases in pounds	10,000

Assuming a shipment of 1,000 cases from Indianapolis to Evansville (170 mi.) and return of empty bottles in the same cases, freight rates per cwt. are as follows:

	Full Cases	Returns	Total	Corresponding Freight Saving per M cases
Carload	$.255	$.17	$.425	$42.50
L.C.L.	.40	.40	.80	80.00

TABLE III—Gross Weights of Representative Wood Beer Cases and Possible Saving Through Use of Corrugated*

	Wood Case Weight (Lb.)	Weight Use of Corrugated Would Save
Company A	66.0	24.5 lb.
Company B	61.0	19.5 lb.
Company C	56.0	14.5 lb.
Company D	59.0	17.5 lb.
Company E	51.5	10.0 lb.
Company E, 36-bottle carrier—per 24 bottles	54.0	12.5 lb.

*Weight of filled corrugated paper beer case, 41.5 lb.

TABLE IV—Comparative Cost of Beer Cases

Wood Cases		
Initial purchase price per M		$740.00
Interest at 6 per cent for estimated life of 4 years		177.60
Repairs at 10 per cent—4 years		296.00
Storage and insurance 3 per cent—4 years		88.80
Total		$1,302.40
Life of case trips		25
Final Cost of wood per M case-trips		$52.10
Corrugated Fiberboard Cases		
Purchase price per M		$100.00
Less salvage value		
Weight per M cases	2,100 lb.	
Scrap value	$15.00	
Less cost of baling	1.00	
Net salvage value per M	$14.00	14.00
Net Purchase Price of corrugated per M case-trips		86.00
Less credits for		
Advertising value	13.00	
Reduction in storage space	3.05	
Freight saving	42.50	
Total	$58.55	58.55
Final Cost of Corrugated per M case-trips		$27.45
Saving in cost per M case-trips due to use of corrugated		$24.65
Saving in cost per M case-trips due to use of corrugated		47.4%

Dairies Will Meet This Gadget Soon

By HALDANE GEE
New York, N. Y.

THIS HAND EMULSIFIER or homogenizer puts milk and butter back together again. It may take the cream off the dairy business and reopen the oleomargarine issue. It is also a new tool for the food laboratory. The domestic model shown here has a 12-oz. reservoir.

THIS FALL sees the introduction of a significant new gadget in the food field. If it takes, as it has done in other countries, it will start doing things to the economics of the dairy industry. The housewife will meet the machine as a device for manufacturing cream at home at less than store prices. The food laboratory will recognize in it a simple portable emulsifier. What it will do for oleomargarine, unless somebody puts on the brakes, is nobody's business. Restaurants will see the equipment as something "hot" —about as "hot" as a still—if things aren't kept on the up and up.

The hand emulsifier is an English development of the past two years. About sixteen different kinds have been manufactured, and the patents run into the hundreds. They capitalize on the fact that, generally speaking, butter fat brings a higher price in the form of cream than when separated and churned and sold as butter. The emulsifier puts skim milk and butter back together again, producing what is to all intents and purposes natural cream, at from one-third to one-half the price which the cream would cost if it were bought. And that is a situation which dairies can scarcely afford to ignore.

The range of devices available commences with one like a bicycle pump, lined with block tin, and priced at one shilling in England. The leader in the field is pictured on this page. It is selling at the rate of a quarter of a million a year, with the market by no means saturated. The makers recently added to it a "desalter," which is essentially a crude separating funnel, and disposed of 30,000 copies of the combined butter desalter and cream maker in the introductory week. Promotion has already begun in the American market.

The housewife making cream removes the salt from an ounce of butter, mixes in a half a pint of milk, and pours the mixture into the bowl. Then she jerks the handle up and down a few times, and cereal cream squirts from the nozzle below. An 8 per cent cream mixture saves about half of the regular price. Whipping cream with 32 per cent butter fat is made just as easily, and at current prices in one selected city of 750,000 costs 8c. to make, in comparison with 27c. to buy. Passed once through the emulsifier, the cream will not separate. Its whipping properties are said to excel those of cream which has not thus been dissected and rescrambled.

Technically, the 12-oz. machine is well made. The parts are of bronze and aluminum, and no rubber gaskets or washers are needed. Inside the bowl is a small pump, with the piston attached to the lever. The mixture to be emulsified leaves the lower end of the pump through a small hole and is distributed along narrow, radial, horizontal grooves. In operation, the jets of liquid strike the vertical walls of the emulsifying chamber with sufficient force to disrupt fat globules, forming a permanent emulsion. The pump handle also operates a beater which agitates the untreated liquid in the reservoir. To pass a half pint of liquid through the machine is an operation which takes a few seconds only.

With cream making successful, the home economics experts have seized on the emulsifier as an instrument for creating new or improved dishes. One of the inventions is a cream jelly, with the cream and the gelatin emulsified together. Egg nogs, ice cream and salad dressings are other delicacies improved by emulsification. The gadget puts colloids in the kitchen without the impracticable machinery of a colloid mill costing several hundred dollars, and performs culinary operations hitherto attempted with an egg beater and considerably more

physical energy. It is not intended to take the place of the mechanical beaters and stirring devices already familiar in the kitchen, commonly an assortment of gears and interchangeable parts, and usually more time-consuming to clean than time-saving to use.

The hand-operated model is advocated as an accessory to both the cocktail shaker and the soda stirrer. Recipes distributed by the manufacturers claim that flavorings hitherto incorporated in alcoholic beverages by distillation can alternatively be added by emulsification. For making gin they suggest the separate purchase through the usual legal channels of juniper oil and alcohol or "whiskey blanc." After the oil has been added dropwise to the alcohol, the blending is completed by passing the mixture through the emulsifier, a trick which would have been worth a lot in prohibition days. It is said also that new smoothness is imparted to oily cocktails when the chilled ingredients are passed through the machine. Soda dispensers who have experimented with the emulsification of drinks containing eggs, milk or ice cream report new flavor qualities entirely.

The cream machines have been adopted for some semi-commercial operations where an industrial colloid mill is not available. Three New York hospitals and others in Baltimore and Chicago are using them for preparing food for premature babies, a task which had previously defied the kitchen egg beater. Emulsifiers have also been applied for general dispensing, with the preparation of honey and almond hair lotion a particularly successful application. At least one tanning company now uses a hand emulsifier for liquors hitherto troublesome to make. Food laboratories will find the device useful for a variety of experimental work.

A one-gallon size, motor-driven, will soon be available for restaurants and confectionery establishments. Neither caterers nor private homes need use fresh milk as an ingredient. The device works with equal success with milk powder, which can be either whole milk or dried skim milk. Higher proportions of butter are of course required for skim milk, but any grade of cream desired can be prepared if the correct proportions are used. The emulsifier makes cream possible in isolated areas where fresh dairy products are not regularly available.

An early handicap for the machines was the need for using only salt-free butter, since cream from salt butter tastes definitely salty. The desalting equipment, however, obviates the need for special butter, and involves an extraction of the salt content with water. In domestic use, the butter is boiled with water, and then the mixture is poured into the bowl of the machine to settle for a minute or two. A valve permits removal of the lower layer of saline, leaving the butter sufficiently salt-free to furnish perfect cream.

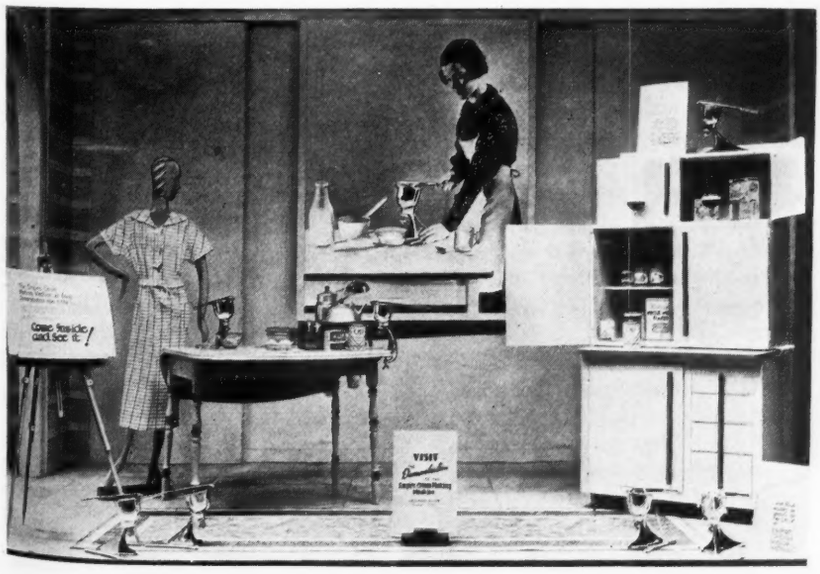
Though the promoters are not encouraging the use of butter substitutes, the door is obviously thrown wide open for the employment of oleomargarine in cream making. The prospect in connection with restaurant operation in particular is for a reopening of the whole oleomargine issue, with possibilities of new regulations and regular inspections.

Ample evidence of technical success of the equipment is wide sale wherever it has been introduced. The procedure is both sure and simple, and is economically advantageous to the housewife as long as milk, cream and butter prices maintain their long-established positions. Dairies may therefore be expected to view the wholesale adoption of cream makers with some concern, and may be compelled to readjust cream prices. Study of the situation to date, however, has led creameries to a policy of encouragement, because though cream sales have fallen, it has been found that milk and butter sales have increased in a more than proportionate amount. The loaning or renting of cream-making machines to customers has been projected by dairies in at least one center.

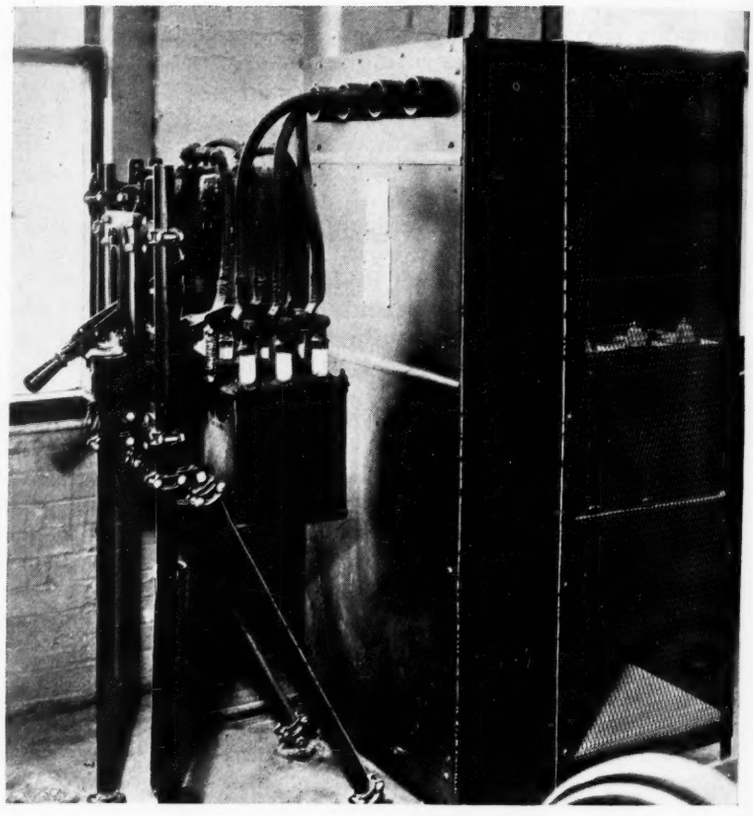
The invention has created at least two kinds of small cream businesses. One is the door-to-door list of customers cultivated by old ladies from the country who formerly handled butter and eggs but who now find machine-made cream more profitable. The other stunt gave the principals some pause, with doubt as to just who is the victim. A large Canadian dairy discovered in recent months that four of its drivers had clubbed together in the purchase of an emulsifier, and were peddling cream on their regular rounds, put together from dairy products, but underselling the company's own cream.

Whether American temperament will consider that the saving on cream offsets the fuss and messiness of its preparation, remains more or less open. One index that the United States will be flooded with cream makers is the fact that they are selling merrily in Toronto, Canada, where the attitude toward domestic gadgets differs but little from that of any city of corresponding size in United States, and where the retail price is high—nearly $8. Another gage was the bombardment of a leading Detroit store for emulsifiers following a chance newspaper item. The store disposed of a rush order at the wholly imported price of $13. The domestic model as manufactured in United States this fall will be about $5 retail, which should incline the housewife to become colloid-minded.

Making the housewife "colloid-minded" by a window display of these emulsifiers. They do tricks with foods hitherto impossible.



THIS CAPACITOR cut $57.87 from the monthly power bill of the Wheeling (W.Va.) plant of Continental Baking Co. and paid for itself in 2½ years. It is a 45-kva., 3-phase, 60-cycle, 220-volt indoor unit.



Correcting Power Factor

Lowers Operating Costs

By F. D. WEATHERHOLT
Industrial Division
Westinghouse Electric & Manufacturing Co.
New York, N. Y.

POWER-FACTOR correction offers most food plants, with their many small induction motors, an unusual opportunity to knock a sizable percentage off their power bills. Of course, power companies in some territories levy no penalty against poor power factor, but this is the exception, not the rule. Usually the charge is heavy when the average power factor falls below 85 per cent, and at the same time bonuses are given when the power factor is maintained above this figure, giving in effect a double penalty.

The bakery typifies the plant that can benefit from power-factor correction, it being between 65 and 80 per cent in this type of plant, which is quite low. This is due to the numerous small induction motors used, many of which are underloaded. With the exception of the main dough mixers, which run between 35 and 50 hp., and the refrigerating machine motors, which are between 15 and 50 hp., practically none of the motors in the average bakery is above 7½ hp., and the average is about 3 hp. These small drives are required for bread slicers and wrappers, dough rounders and dividers, fans and blowers, conveyors and elevators, pan greasers, car washers, and so on. Synchronous motors, which are one means of correcting power factor, are not available in the small ratings, and even if they were they would not have the characteristics necessary for driving the various types of baking machines. There are a few instances in which high-torque synchronous motors could be used on the larger refrigerating machines, but this is rare and, besides, the application is not particularly desirable. Bakeries operating fleets of electric trucks, however, sometimes may use synchronous motor-generator sets for charging batteries.

Power-factor correction in bakeries can best be accomplished by installing capacitors. Group correction—that is, the installation of one capacitor to correct the entire plant load—is the most desirable because of the wide distribution of load throughout the plant and the lower initial cost as compared to installing smaller individual units. The large capacitors used for group correction are compact and require comparatively little space.

Where the plant has a primary power contract it is advisable to install the higher voltage capacitor because of its lower cost. This type of capacitor may be installed in the transformer vault on the high-tension

Table I—List of Cost and Savings Items for Capacitor Installation at Norristown Plant of Continental Baking Co.

Cost of capacitor	$465.00
Cost of installation	50.00
Total cost	$515.00
Gross bill for Sept. 1933	323.20
Power factor credit (15% of gross bill)	48.48
Total net bill	$274.72
Before installation, bill for Sept. 1933, on basis of 76 per cent P.F., would have been:	
Gross bill for Sept. 1933	$323.20
Power factor penalty (4.5% of gross bill)	14.54
Total net bill	$337.74
Reduction in monthly bill by installation	$63.02
Reduction in annual bill	$756.24

line, just back of the main incoming-line circuit breaker. And sometimes it might be desirable to make an outdoor installation, such as the pole-type outdoor capacitor unit.

Once installed, capacitors cost little to operate; the wattage loss is so small as to be practically negligible and the depreciation is low, because there are no moving parts.

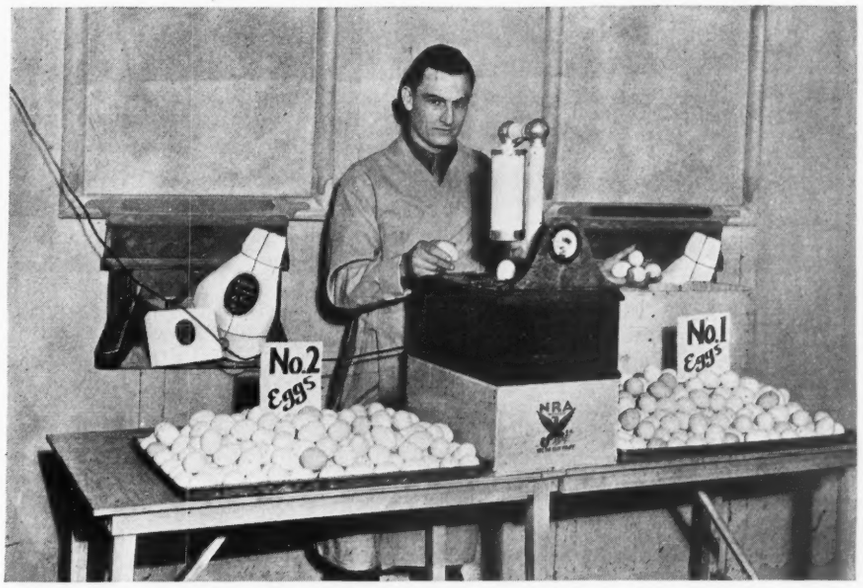
Continental Baking Co., baker of Wonder Bread, has made two capacitor installations which show what this equipment costs and what it will do in the way of cutting power charges. At its Norristown (Pa.) bakery, there was imposed by the power company a penalty of 0.5 per cent for a power factor below 85 per cent, and a bonus of 1 per cent was allowed for a power factor above that figure. A capacitor installed at this plant at a total cost of $515 corrected the prevailing power factor of 76 per cent to unity (100 per cent) and effected a saving in the power bill of approximately $63 a month, or $756 a year. This was enough to pay for the installation in 8½ months, and it meant thereafter a monthly power bill lower by $63. Table I lists the various elements making up the costs and savings for this installation. The capacitor is a 20-kva., 3-phase, 60-cycle, 440-volt, indoor unit.

Continental Baking also installed a capacitor at its plant in Wheeling, W. Va., where the power factor prevailing at the time of the installation was 73 per cent. In this case the kilowatt-hours billed by the power company was determined by multiplying total power consumption by constants so weighted as to give a graduated bonus for power factors above 85 per cent and to levy a penalty below 85. This capacitor reduced the monthly power bill by $57.87, which was sufficient to pay for the installation in about 2½ years; the total installation cost was $1,741. Table II gives the items making up the costs and savings of the installation. This capacitor is a 45-kva., 3-phase, 60-cycle, 220-volt, indoor unit.

The figures on the Continental Baking capacitors give actual operating evidence that power correction in baking plants is highly desirable in territories where the power companies offer an inducement. These installations are not "special" examples, for it is not uncommon to find that capacitors can be paid for out of savings in from six months to three years.

Table II—List of Cost and Savings Items for Capacitor Installation at Wheeling Plant of Continental Baking Co.

100% P.F.—Multiplier constant	0.9510
95% P.F.—Multiplier constant	0.9650
85% P.F.—Multiplier constant	1.0000
73% P.F.—Multiplier constant	1.0628
Cost of capacitor	$1,542.00
Cost of installation	199.00
Total cost	$1,741.00
Kw.-hr. consumed June, 1929	34,500
Total bill without P.F. multiplier	$517.50
P.F. multiplier (73% P.F.)	1.0628
Total net bill	$550.01
After installation, bill for same month, on basis of 100% P.F., would be:	
Total bill without P.F. multiplier	$517.50
P.F. multiplier (100% P.F.)	0.951
Total net bill	$492.14
Reduction in monthly bill by installation	$57.87
Reduction in annual bill	$694.44



IN THE HAND-OPERATED MACHINE demonstrated at the Remley Food Arcade, St. Louis, the photo-cell current is amplified to avoid the use of an expensive and delicate micro-ammeter. Fully automatic machines not only feed the eggs into the testing zone but also pack them into cartons of one dozen each.

Eggs Candled Automatically

FOR a period longer than the memory of man, eggs have been examined before a strong light to determine their fitness for human consumption. If the light passing through the egg casts no shadow, the egg is declared "good."

Until an automatic machine was invented more than a year ago, by Wheaton C. Ferris, of Ost Laboratories, and Albert Morelock, electrical engineer, St. Louis, Mo., and recently put on public display, the human eye was the judge of whether the egg was of "good," "medium," or "bad" quality. In this machine the amount of light passing through the egg is measured by the use of a photo-electric cell and the eggs can be selectively graded on the basis of transmitted light. Still more recently a company, Egg Candler, Inc., has been organized in St. Louis to put this machine into commercial operation. It is asserted that one of these machines will handle 30 eggs a minute, as compared with 18 eggs a minute by the average manual methods of candling, and that the eggs are more accurately graded on a quality basis.

One of the problems which gave the inventor much difficulty was a method of handling the eggs by auto-

(Turn to page 386)

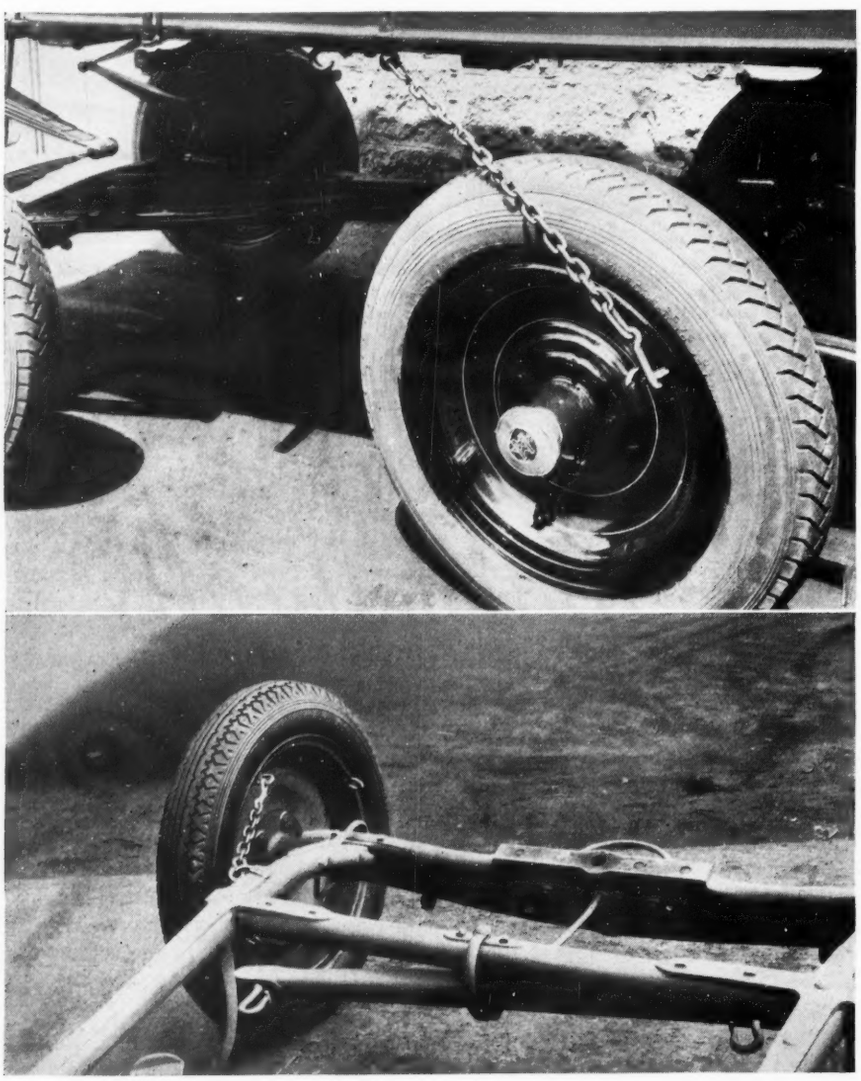
Pneumatic-Tired Horse Wagons

Slow Speeds Minimize Need for Brakes Except on Wagons Used on Hilly Routes

PART III

WHEN a wagon having plain-bearing axles and steel-tired wheels is remounted on anti-friction bearing axles and pneumatic tires, need it be fitted with automobile-type drum brakes? That question briefly states the problem for those retail milk or baking companies which are considering the conversion of their wagons.

The majority of retail milk companies using pneumatic-tired route wagons have come to the conclusion that, with very few exceptions, drum-type brakes are unnecessary. This decision has been reached after a full consideration of all the factors involved. These factors include the necessity for bringing the wagon to a stop; of keeping it stationary when stopped; and the expense of providing drum-type brakes for those purposes as compared with other means of accomplishing the same ends. It is the feeling of those companies which have from half a dozen to 200 or more retail milk wagons mounted on anti-friction-bearing axles and pneumatic tires, that between such wagons and those on plain axles and steel tires, the differences of pull and retardation required to bring the wagon to a stop are not enough to require drum-type brakes.



Top, the chain fastener used by the Whiting Milk Companies, Boston, Mass., in place of drum brakes to hold the wagon stationary when stopped. Above, a similar arrangement used on the conversion unit furnished by E. Teel & Co., Medford, Mass.

The wagon on anti-friction bearings and pneumatics does not roll so easily when empty or loaded that it will require drum-type brakes to bring it to a stop. Such a wagon will come to a stop almost simultaneously with the cessation of the horse's pulling effort.

Although one company, The Mitchell Dairy Co., Bridgeport, Conn., pointed out (June, FOOD INDUSTRIES) that horses break down in the rear legs from innumerable stops as well as in the front legs from their pulling efforts, there is no unanimity of opinion among the users of pneumatic-tired wagons that drum-type brakes will lengthen horse life. It is admitted that the condition, as pointed out by the Mitchell company, would be aggravated in continually going down steep hills.

The case for the drum-type brake, if a case there be, is limited to the use of pneumatic-tired wagons on hills. The shoe type of brake, such as the metal or wood block pressed against the periphery of a steel-tired wheel, is not suitable for use against a compressible, air-inflated tire. Even if such a shoe brake could be forced against the tire to keep the wheel from revolving, this would be harmful to the tire by tending to scuff off its tread.

Where some sort of brake is necessary on extremely hilly routes, the drum-type is more acceptable than any other. It is also more adaptable to automobile type wheels, when these

Three in a row! The steel-tired wagon being replaced as rapidly as possible by the pneumatic-tired wagon, shown in the center, and one of the Model B Divcos owned by the Whiting Milk Companies in Boston, Mass.

are employed in preference to cutting down the old steel-tired wheel and machining the old type hub to accommodate some form of anti-friction bearings. Since all cars now come with four-wheel brakes as standard equipment, either old or new wheels can be or are designed for the attachment of brake drums.

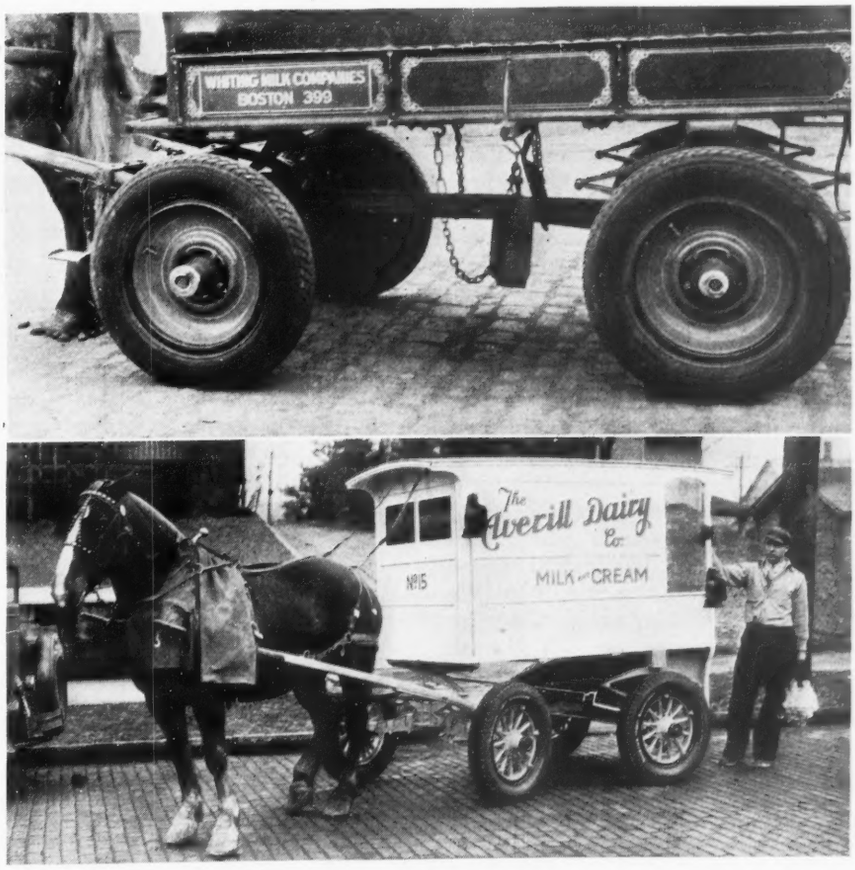
No types of brakes are readily applied on the front wheels of wagons, because of the fifth wheel necessary for turning purposes, but can be mounted on the rear wheels without difficulty if these are the automobile type. When so mounted they may be operated by an automobile type of hook-up consisting of an equalizing shaft; shaft hangers; connecting rods or cables; holding ratchet and foot pedal or hand lever. Depending upon the type of wagon, the brake drums and hook-up may be from moderately simple to somewhat complicated, and may cost from $25 to $75 to complete for both labor and material. Hence the lack of enthusiasm of owners of pneumatic-tired wagons to mount drum brakes except in unusual cases.

There seems to be little need for drum-type brakes to keep the wagon stationary when stopped or to hold the wagon in position when stopped on a hill, especially when either task can be accomplished at much less expense in other ways. Besides, E. Teel & Co., Medford, Mass., which converted the 200-odd wagons of the Whiting Milk Companies in Boston, Mass., from steel to pneumatic-tired units, is authority for the statement that even if the wagons were equipped with four-wheel brakes, they would not hold the horses if they decided to go; the equipment would merely impede them.

The Teel company feels that drum brakes are an unwarranted expense. For keeping the wagon stationary, it furnishes as standard equipment on its conversion unit a chain fastened to the shaft and hooked into an eyebolt on the inside of one of the front wheels, as shown on the opposite page, as a reminder to the horse that he is supposed to stay hitched.

The Whiting Milk Companies use a similar chain fastened to the edge of the underside of the body midway between front and rear and hooked over an eyebolt on the outside of the left rear disk wheel. Some Whiting wagons are furnished with wood chocks suspended on chains hung under the body floors.

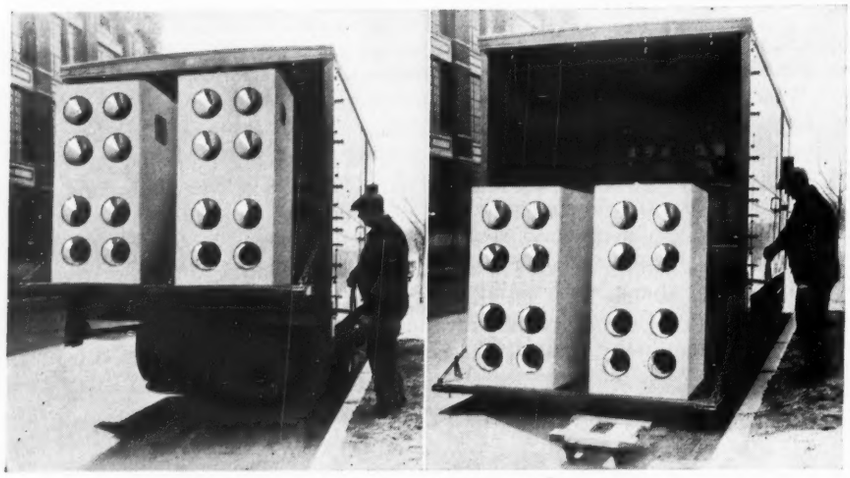
Hillcrest Dairy, in Worcester, Mass., uses no brakes except on a couple of wagons mounted on second-hand Dodge car wheels already fitted with drums. Producer's Dairy Co., Brockton, Mass., uses wood chocks hung on chains, to help hold its wagons on hills. Mitchell Dairy Co., Bridgeport, Conn., uses Ford brake drums on several units. Metzger Daires, in Dallas, Texas, using automobile wire wheels with brake drums, has several hooked up with foot pedals. Averill Dairy Co., Akron, Ohio, uses brakes on some wagons, as shown on this page.



Top, another of the wagons of the Whiting Milk Companies showing the wood chock hung on a chain and used to hold the wagon on hills. Above, a drum brake hook-up on one of the rear-drive wagons used by Averill Dairy Co., Akron, Ohio.

Elevating Truck Tailgate Saves Time

Suitable for Handling Iceless Refrigerators and Other Bulky Loads in the Food Field



Raised and lowered positions of Davey-Troell power elevator tailgate for handling heavy or bulky objects in the food field and especially adaptable to handling ice cream iceless cabinets.

PARTICULARLY adaptable for the handling of iceless cabinets used in the ice cream business, the Davey-Troell power elevator tailgate illustrated here permits such cabinets to be loaded into the truck body without manual lifting when placed into the truck at the ice cream plant or unloaded on the sidewalk in front of the customers' stores.

The equipment not only saves time in loading and unloading heavy and unwieldy cabinets but also reduces damage in handling, hernias, strained backs, and other personal injury to the men installing and removing such cabinets.

The equipment is made by the Davey Compressor Co., Inc., Kent, Ohio, and may be applied to any make, model or capacity of gasoline motor truck. The tailgate is raised or lowered by power taken from the truck's gasoline engine.

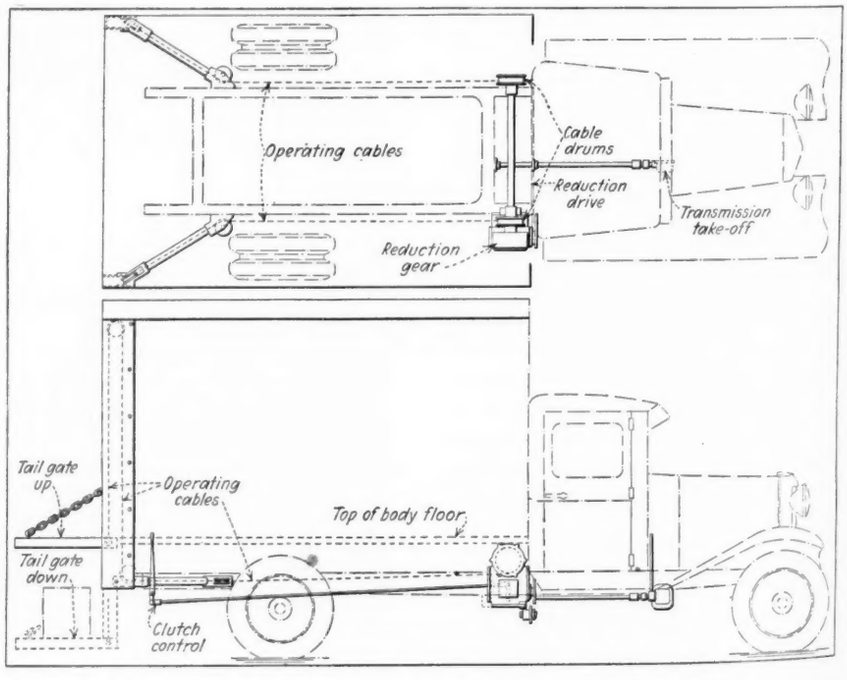
The device is the invention of L. S. Troell. The first unit was developed to mechanical perfection in the active service of the Brooklyn Union Gas Co., Brooklyn, N. Y., of which Mr. Troell has for years been superintendent of transportation.

Besides handling ice cream iceless cabinets such as are now almost universally employed in the retail sale of ice cream in all large cities, the tailgate has been successfully employed in the handling of mechanical refrigerators, ranges, radiators, boilers, water heaters, ovens, furnaces and other heavy or bulky articles hard to handle or subject to damage if dropped.

As shown in the accompanying illustrations and drawings, the Davey-Troell unit consists essentially of a power take-off, the elevating tailgate and the connecting and control members. It is entirely separate from the truck engine, chassis, or body and can be engineered to fit any type of body.

When the truck is traveling, the power tailgate is a regulation type of vertical endgate of standard dimensions, serving to hold the load safely in place. When the truck is ready to unload, the tailgate is swung out horizontally on its pivoted lower edge so that it is flush with the floor of the body.

When the object to be unloaded is moved out onto the tailgate, the latter is lowered vertically to the platform, sidewalk or street level. This vertical movement of the tailgate is ac-



Plan and elevation drawings of Davey-Troell power elevator tailgate showing construction and arrangement of its operating mechanism.

complished by means of two cables attached to two rams which move up and down in the rear corner posts of the body. The cables pass over pulleys at the top and bottom of the rear body posts and thence horizontally forward to two drums mounted on a shaft crosswise of the chassis underneath the body just back of the truck cab. These drums are revolved by means of a worm shaft and reduction gear operated by a power take-off attached to the engine transmission or gearset.

The tailgate can be stopped or started at any point of its vertical travel by means of a control lever located conveniently at the rear of the truck on the right, or curb, side. Thus the man operating the control lever has the tailgate in full view at all times.

The worm gear used in the power transmission to the crosswise shaft carrying the cable drums has a ratio of 40 to 1. Its action thus serves as a brake to hold the tailgate at any desired level. The speed of the tailgate travel can be regulated at will by varying the engine speed.

Chart Checks Refrigerator Bodies

THOSE truck or transportation engineers in the food field who must pass upon the correctness of the design of refrigerated truck bodies employing solid carbon dioxide can make excellent use of a new chart recently made available by the Carbonic Ice Division of the Liquid Carbonic Corp., 3100 South Kedzie Ave., Chicago, Ill.

The chart, which, because of its 9x11-in. size, cannot be reproduced herewith, consists of four sections. These sections, when used in order, permit the engineer to determine the most economical body for any given set of operating conditions.

Using the given conditions, the chart as a whole indicates the most economical body in kind of insulation, in thickness of insulation and in the economy of ice consumption as compared to the economy of truck weight and operation costs.

The chart was developed by engineers of the Liquid Carbonic Corp., working in its research laboratory devoted to the solution of problems encountered by companies handling perishable food products in truck bodies or refrigerated railroad cars. Copies of the chart, together with directions as to its use, may be had gratis upon application to the Liquid Carbonic Corp. at the Chicago address.

Covers Essential Factors

The chart treats of consumption of refrigerant in pounds per hour, that flow in B.t.u. per hour, conductivity in terms of B.t.u. per hour, area in square feet, temperature variation in degrees Fahrenheit, and insulation in kind and thickness in inches.

The first section of the chart gives the rate of flow of heat units per hour per square foot of surface per inch of insulation thickness. The second section shows the total flow of heat units per hour according to the various thicknesses of different insulating materials.

The third section indicates the number of heat units which will enter the interior of a truck body per hour, knowing the square-foot area of the body and the flow of heat units per hour per square foot according to the insulation thickness. The fourth section shows the pounds of CO_2 ice required per hour according to the temperature to be maintained.

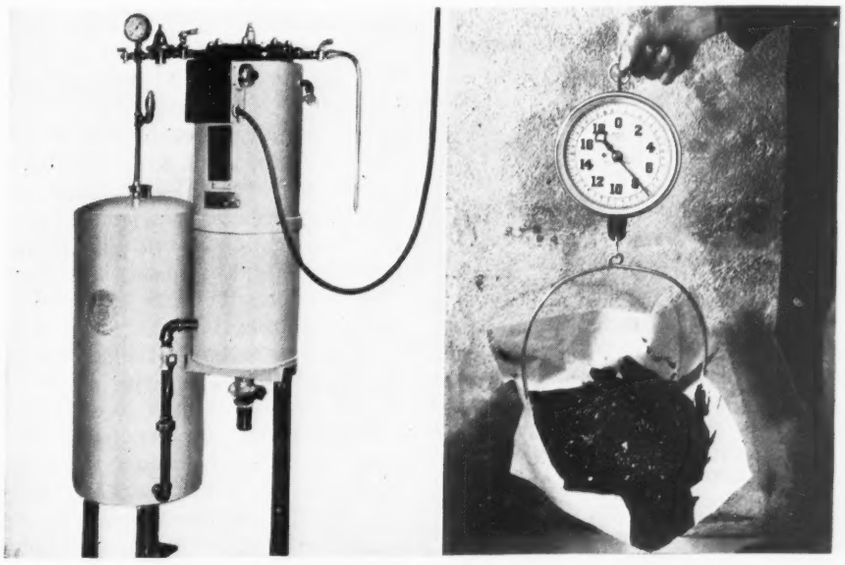
New Skinner Oil Filter

THE Skinner Stream-Line oil filter illustrated below is designed for fleet owners in the food field who operate five or more motor vehicles. It is furnished in various capacities in accordance with the quantity of crankcase drainings to be filtered.

The machine is made by the Skinner Motors, Inc., Detroit, Mich., and is featured by its use of the principle of edge filtration. In this design, the oil is forced by pressure or vacuum between and not through thousands of flexible disks, compressed together at a pressure of 80 lb. per sq.in.

The impurities in the oil are collected at the edges of the disks, which may be cleaned by a reversal of the operation so that they need be replaced only once a year. Both solid impurities and liquid diluents are removed, the latter being done by heat.

The machine is automatic in operation, occupies little floor space and delivers oil with specifications approximately the same as the original oil at machine costs of as little as 4c. per gallon.



Left, the new Skinner Stream-Line oil filter which is furnished in various capacities for food-field truck fleets of as small as five vehicles. Right, 7¼ lb. of solids filtered from 60 gal. of crankcase oil from a fleet with engines fitted with ordinary oil filters.

WHAT'S ON YOUR MIND?

Lactalbumen

To the Editor of FOOD INDUSTRIES:

Soluble lactalbumen must be carefully differentiated from insoluble lactalbumen. The former product is isolated only with great difficulty, but Mr. Watson, of the U. S. Department of Agriculture, has developed an electrolytic process for separating soluble lactalbumen in a more or less purified form. However, his product at best will still be quite expensive. It is proposed to use this soluble lactalbumen as a modifier for infant foods, where it is said to be valuable in rendering the food more digestible by favorably modifying the curd. Also, some of the medical people believe that lactalbumen is a good food for helping infants build resistance to disease.

Insoluble lactalbumen may be obtained from boiled whey and has commonly been regarded as of not much food value. However, it has been used in poultry feeds with rather remarkable results, indicating that the insolubility of the product in water is not necessarily an index to its digestibility. This product occludes milk salts and is purified only with considerable difficulty. However, we have prepared insoluble lactalbumen in quantity with an ash content as low as 1 per cent. So far as we know, neither the crude nor purified insoluble lactalbumen has been used to any extent in food products, but they should be tried out in such industries as the baking industry.

Lactalbumen is a most complete protein containing a very large assortment of amino acids. I would be glad to supply any interested parties with samples of crude insoluble lactalbumen and refined insoluble lactalbumen. The ultimate costs of these products probably would be comparable to casein.

S. M. WEISBERG,
Research Laboratories,
National Dairy Products Corp., Inc.
Baltimore, Md.

Sulphur Dioxide in Foods

The American Medical Association's Committee on Foods says that sulphur dioxide in the quantities in which it occurs in cane-sugar molasses and in cane-syrup products is harmless and unobjectionable. The sulphur dioxide is used to retard fermentation and to improve the color of the cane-sugar juice. It is understood that the sulphur-dioxide content of the syrups on the market is very small; it usually runs less than from 100 to 200 parts for each million parts of syrup.

Under the Food and Drugs Act no objection is taken by the government to the presence of these small quantities of sulphur dioxide in foods. The government has carefully investigated any possible injurious effect of sulphur dioxide being added to foods. No objectionable digestive or physiologic effects have been disclosed.

The sulphur dioxide in dried fruits is chemically bound with certain organic compounds. This sulphur dioxide in "sulphured" dried fruits also is harmless. The government in all cases requires the label declaration of added sulphur dioxide for foods treated with sulphur dioxide.

Flours treated with bleaching agents now in use in the milling trade are in no way harmful because of the presence of any minute quantities of bleaching material that may be retained in the flour. Assertions that bleached flour is harmful are not based on fact and are merely unscientific statements of hearsay.

No concern need be felt regarding any possible harmfulness of bleached flours or foods treated with sulphur dioxide that are now on the market.—*Reprinted from Hygeia, May, 1934.*

Ultra-Violet Rays at Work in Dairies Now

(Concluded from page 345)

one-thirtieth of a cent per quart above the first 250,000 quarts irradiated per month. Interest and depreciation are estimated at $2.04 per day.

As a business builder, several dairies report that vitamin D milk is a great help. It gives route salesmen something new to talk about. Oddly enough, one company states that after installing an irradiator and beginning a sales drive, not over 10 per cent of its *new* customers take the vitamin D milk, yet a current list of "starts and stops,"—i.e., new customers and customers lost—runs in the ratio of two to one. Business is being increased ostensibly by vitamin D milk, but only 10 per cent of the new customers buy it.

This increase in patronage is attributed to the sales drive more than to the vitamin D milk itself. Every concern using the irradiator must apply for a license under the Steenbock patent, which, when granted, permits him also to display the seal of approval of the American Medical Association—provided that the licensee uses the prepared advertising already approved in advance by the Committee on Foods of the American Medical Association. Thus the concern which irradiates its milk also goes in for an advertising campaign.

Where does the break-even point come? How much irradiated milk must the company sell to barely break even on cost? This question was put to a number of dairies and brought forth various estimates.

Company A says that 750 quarts daily is the break-even point; Company B is certain that it is higher than 750 quarts, but does not know where it comes. Much seems to depend on how much money is being put into the advertising drive, which in the case of Company B is very large. Even with a volume of irradiated milk of 6,000 quarts daily it has experienced no net profits on the *irradiated* milk. Yet it is satisfied because it is getting so many new customers on regular milk.

In one State, fairly well known for its milk price wars, there is a State Milk Control Board which has ruled that in the case of irradiated milk it must sell at 1c. per quart above the corresponding Grade B or Grade A price. The reason for this ruling is very interesting.

Company C, which has been irradiating milk for some months, had a very small volume on Grade A milk but a large volume on Grade B. Company D, a competitor, had a large volume on both Grade A and Grade B milk and wanted to sell both grades at no extra price for irradiation. Company C, however, planned to use irradiation as a method of boosting sales on Grade A at no added price, and expected to make up the cost on Grade B—i.e., increase the selling price of Grade B but not Grade A. A third company came into the picture at this point, Company E, which was beginning to feed irradiated yeast to its cows to produce vitamin D milk. The latter company had its own ideas as to the proper price to charge for vitamin D milk. To settle the whole thing the State Milk Control Board ruled that irradiated milk must sell at, at least, 1c. per quart above Grade A or Grade B price. And there the matter rests today.

The use of irradiation to give vitamin D potency to evaporated milk has recently been started by Borden Co., Nestle's Milk Products Co., Carnation Milk Co., Pet Milk Co., and Indiana Condensed Milk Co. This treatment is possible because vitamin D can withstand heating without impairing its potency.

IDEAS . . . FROM PRACTICAL MEN

How to Make a Hygrometer

From two cold-storage thermometers it is easy to construct an inexpensive instrument for measuring relative humidity in a cold room. This was done in a plant where the author is chief engineer, it being desired to maintain in the cold room a relative humidity of 90 per cent and a temperature of 35 deg. F. These conditions produce approximately one degree difference between wet- and dry-bulb temperatures, and the regular cold-storage thermometers with their one-degree divisions proved adequate.

The two thermometers were hung side by side on a $\frac{3}{4}$-in. board. Around the bulb of one was fastened a hygrometer wick, tied above and below the bulb with thread. Beneath this thermometer was mounted a small tin can, filled with water into which the wick extended. With the two temperature readings, per cent relative humidity is obtained by referring to a relative-humidity chart. Highest accuracy is obtained with a slight circulation of air.

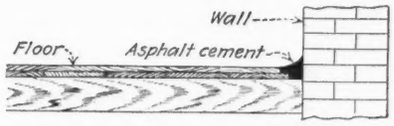
H. A. PRATT, *Williamson, N. Y.*

Hot Plate Seals Packages

The use of cellulose tape in hand wrapping bakery products in transparent cellulose has been eliminated by Pitt Bakeries, Inc., Pittsburgh, Pa., with a saving of $8 a week. At the same time the amount of labor required for wrapping has been reduced by 12½ per cent. This was done by using an electric hot-plate to heat-seal the transparent cellulose wrapping, and it is estimated that the hot-plate paid for itself in ten days of operation. Thermostatically controlled, the hot plate can be adjusted for heating the wrappers to any temperature between 200 and 450 deg. F. This method of sealing is equally effective in applying transparent cellulose bands to food products.

Stops Cracks Around Walls

In old plants with wood floors and walls, or with wood floors and masonry walls, the floor usually has pulled away from the wall, leaving an opening ¼ in. to 1 in. wide which acts as a dirt receptacle and retreat for insects and mites.

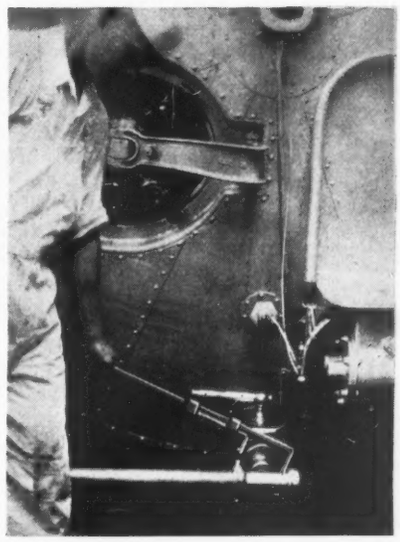


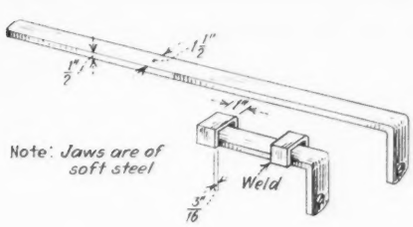
A simple means of remedying this condition is to tear out all the molding and fill the space between the floor and wall with melted asphalt cement. Where the crack is large, the cement may be mixed with sand to give it body. If worked into the openings, this will look neat and be sanitary. And it will make one less place to look for "bugs."

HARRY STINER, *New York, N. Y.*

For Cracking Tough Nuts

Union nuts on sanitary pipe lines occasionally defy the ordinary one-ear wrench. But to dislodge them is merely a matter of seconds with the automatic adjustable two-ear wrench made in the machine shop of a San Diego dairy plant. The jaws of this wrench are formed from ½x1½-in. soft steel, the inner jaw being attached to the outer one by two slide guide straps shaped from $\frac{3}{16}$x1-in. soft steel and welded in place. Both jaws have holes to receive the ears on the union nut, and the wrench is applied by sliding the inner jaw along the handle of the outer one. You can crack loose any size of the two-eared nuts with it.





BILLIE BURGAN, *San Diego, Calif.*

Preventing Explosions

During the past few months several disastrous boiler explosions have been reported. Two of these occurred in the food industries. Boiler explosions invariably are caused by negligence or carelessness on the part of someone. Where highly trained operating engineers are not available, it is recommended that every plant manager inform himself as to the hazards of boiler operation, and train his firemen accordingly.

The American Society of Mechanical Engineers, 29 West 39 St., New York, N. Y., has published a set of rules for the care of power boilers. If firemen are trained according to these rules, explosions can be prevented. In addition, it is advisable to insist upon yearly inspections of boiler equipment by a competent boiler man, and to check operating practices with a competent engineer. The expense incidental to maintaining the safety of boiler equipment will always be returned in lowered maintenance costs and continuity of operation.

S. H. COLEMAN, *Waynesboro, Va.*

IN THE CURRENT OF EVENTS . . .

- *Pressure from trade forces master code ahead*
- *Tariff swap with Cuba threatens sugar industry*
- *FTC starts probing at dairy industry's innards*
- *Wallace stands pat on processing tax policies*
- *Shippers lose right to refrigerator-car "rebates"*
- *Labor troubles small but many in food industry*

Master Code Again Near Approval; Other Codes up for Alterations

Code activities of the food industries centered about the long-delayed master code during the past month, with three minor codes being approved and steps being taken to patch up weaknesses in codes already in operation. Taken into the remodeling shop of N.R.A. more than a month ago, the master code remains on the work bench. Through pressure brought by Associated Grocery Manufacturers of America and hearings of the industry with Armin W. Riley, N.R.A. Food Administrator, factors blocking the progress of the code were finally removed and an agreement reached between N.R.A. and industry which pointed to approval of the code at an early date. It appears that the N.R.A. finally moderated its viewpoint and realized the importance of quick action to clear the way for the creation of the Advisory Board of Grocery Manufacturers to coordinate code matters; the proposed food and grocery conference committee also hangs upon approval of the master pact. However, Mr. Riley stuck by his conviction that acceptance of the code be voluntary.

Will Come Under Basic Code

Master code or no master code, the smaller food trades either will have to adjust their troubles and meet N.R.A.'s idea of hours and wages or else come under the new basic code which is to embrace the operations of all industries not now under pacts. While it is not mandatory that all industries come under this basic code, General Johnson ruled that if at the end of 30 days any industry appears to be harboring labor abuses, it must submit its case to Washington. N.R.A. will then determine whether a pact covering hours and wages should be imposed.

At a hearing July 10 on the "break-and-take" provisions of the confectionery codes a majority were against this practice, so N.R.A. ruled it out after July 30. At a hearing July 24 on the bottling industry's request for a schedule of minimum prices, small plants expressed considerable opposition to the move, declaring that minimum prices would drive the small bottler out of business. Practically all other witnesses, however, strongly supported the proposal and it apparently will go through. Following a public session July 25 on the request of National Kraut Packers' Association that kraut packers be included in the canning code, it seemed practically assured that this would be done. Only one witness appeared at the hearing and he made no statement.

Other industries have requested changes in their codes, and these are under consideration. The code authority for the bakers sought an amendment to give representation on the code authority to chain-store bakeries, and no objections were registered at the hearing. A wage differential—5c. for unskilled workers—in favor of the New Orleans and Dallas regions was asked by the macaroni code authority, and at a hearing objections were raised. Early in July, the mayonnaise code authority wanted minimum prices set up, but factions in the mayonnaise price war got the situation straightened out themselves.

Final action on the proposed code for the prepared meats industry, on which hearings have already been held, are being blocked by difficulties with the A.A.A., which has joint jurisdiction.

Other food code activities of the past month include temporary approval of minimum compensation for employee fishermen in the canning industry, inclusion of the Hawaiian pineapple canning industry under the mainland code applicable to that industry, conclusion of a hearing on a proposed code for the package and pasteurized-blended and process cheese industry, and the scheduling of Aug. 4 as the date for a hearing on the Pacific dried-fruit industry code.

The codes approved in July are those covering the manufacture of yeast, importation of green olives and wholesale distribution of fresh fruits and vegetables.

WHERE CODES STAND

APPROVED

Atlantic Mackerel	May 3	NRA
Baking	May 29	NRA
(Amended Code accepted June 18)		
Beet Sugar (Labor Provisions)	Oct. 27	NRA
Blue Crab	May 5	NRA
Bottled Soft Drink	June 7	NRA
Brewing	Mar. 22	NRA
California Sardine Processing	Apr. 24	NRA
Candy Manufacturing	June 11	NRA
Canned Salmon	May 16	NRA
Canning	May 29	NRA
Chewing Gum	Jan. 30	NRA
Cocoa and Chocolate	June 16	NRA
Coffee	Feb. 6	NRA
Fishing (Master Code)	Feb. 26	NRA
Fresh Oyster	Mar. 10	NRA
Grain Exchanges	Mar. 20	AAA NRA
Ice Cream Cone	June 4	NRA
Imported Date Packing	Nov. 11	NRA
Imported Green Olives	July 24	NRA
Macaroni	Jan. 29	NRA
Malt Products	June 22	NRA
Mayonnaise	Mar. 21	NRA
New York Live Poultry	Apr. 13	NRA AAA
Peanut Butter	Apr. 4	NRA
Preserved, Maraschino Cherry & Glacé Fruit	June 8	NRA
Raw Peanut Milling	Jan. 12	NRA
Retail Food & Grocery Trade	Oct. 21	NRA
(Labor Provisions)	Nov. 15	NRA
Southern Rice Milling	Nov. 21	AAA
Spice Grinding	May 11	NRA
Tapioca Dry Products	Mar. 12	NRA
Wheat-Flour Milling	June 9	NRA
Wholesale Confectioners	June 6	NRA
Wholesale Food & Grocery	Jan. 4	NRA
(Labor Provisions)	Nov. 15	NRA
Wholesale Lobster	Apr. 13	NRA
Yeast	July 2	NRA

HEARINGS SCHEDULED

Pacific Dried Fruit	Aug. 4	NRA

Processing Tax Policy To Continue—Wallace

There is little or no possibility that processing taxes will be eliminated during the coming year, Secretary Wallace held last month in a statement of A.A.A. policy. The lack of an alternative plan to replace the A.A.A. planning program and the apparent effectiveness of that program were the reasons given for continuation of A.A.A. policies. Furthermore, the Secretary stated, the West wants more control, more benefit payments and sees no difficulty in the processing taxes now. Tentative plans for continuation of the 15 per cent wheat acreage reduction during the next crop year seem to bear out the statement that the 30c. processing tax on wheat will be maintained. In fact, it is thought that the wheat processing tax may be increased to 34c. a bushel by repassage of the Shipstead bill, which the President refused to sign, though favoring it, on the ground that its course through Congress was irregular.

Riley Rumor Laid to Trade

Insistent current reports that there is an open break between General Johnson and Armin W. Riley, chief of N.R.A.'s food and grocery section, which will lead to the removal of the latter and reorganization of his section, are scoffed at by authoritative sources within the administration.

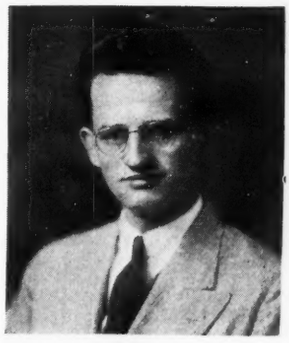
Here is the story as they tell it. There have been only two points of difference between the General and his food division chief. One was on the proposed brokerage provisions in the canners' code, which General Johnson wanted, and the other was on the question of giving retail meat dealers a code separate from grocery retailers.

ARMIN W. RILEY

These same authoritative sources within N.R.A. insist that the rumor that Johnson and Riley had come to a parting of the ways was started by proponents of the master grocery manufacturers' code, who wanted to apply it to all engaged in manufacturing food products.

Orders Action on Fruit And Vegetable Containers

Transportation Coordinator Eastman has referred again to the railroad regional coordinating committees his proposals with reference to fresh fruit and vegetable containers and loading rules, with the injunction that if the railroads do not act voluntarily, the alternative is a mandatory order. First submitted last December, the coordinator's proposals contemplate that an existing agency be empowered or a new agency be set up for the purpose of testing, preparing and prescribing standard specifications and loading rules. The reply received from the special committee appointed by the coordinating committees to report on these proposals is regarded by Mr. Eastman as a disappointing document, as its alternative goes no further than to place recommendatory powers in the hands of the freight container bureau of the American Railway Association, and in doing so nullifies its recommendations by continuing substantially present methods and procedure.



KARL HAUCK

Recently appointed full-time consumers' adviser to the baking code authority, he will ride herd on the bakers, making studies of costs and prices in market areas where destructive price-cutting appears. A member of the N.R.A. Consumers' Advisory Board, Mr. Hauck acted as adviser during the formation of the baking code, and he recently has been investigating the competitive situation in the bakery trade at Louisville.

Code Budgets Vary Widely

Code expense budgets, unknown quantities which have hung threateningly over the food industries for some time, when submitted to N.R.A. for approval have varied widely. Amounts asked for range from $172,040 for the macaroni industry down to $19,391.01 for the blue crab industry. While some of the budgets cover expenses during a specified fiscal year, others estimate expenditures for periods from three to nine months long.

Two such budgets have been approved: bottled soft drink industry, $111,850, year beginning last June 7; and coffee industry, $75,000, fiscal year beginning last Feb. 16. Others pending approval are: wheat milling industry, $50,000, period June 13-Sept. 13; mayonnaise industry, $75,000, year ending next April 10; cocoa and chocolate industry, $40,054, period July 1-March 31; macaroni industry, $172,040, period last Feb. 1-June 30 next; live poultry industry in metropolitan New York, $88,997.85, fiscal year beginning last May 1; and blue crab industry, $19,391.01, period last May 30-April 30 next.

Rawls Heads Food Division In Commerce Department

Fletcher H. Rawls, a man long engaged in the food production and distributing industries in different parts of the world, has succeeded E. G. Montgomery as chief of the foodstuffs division of the Bureau of Foreign and Domestic Commerce, Mr. Montgomery being drafted by N.R.A. for code research work. Mr. Rawls promises that the foodstuffs section under his direction is to become a clearing house for practical, up-to-date distribution and sales information that will aid the food industry.

Before accepting his new position,

FLETCHER H. RAWLS

Mr. Rawls was president of a subsidiary of Liberty Baking Corp. and vice-president of Rawls-Dickson Candy Co., Winston-Salem, N. C., being engaged in the food industry of the South since 1920. For nine years he was in Central America and Cuba engaged in the production and distribution of tropical foods. During 1918-19 he was with the Sugar Equalization Board in New York, conducting at the time an investigation in northern Europe, including Russia.

Sugar Tariff May Be Cut ½ Cent In Trade "Swap" With Cuba

Another controversy is on between the sugar industry and the administration. This time it is in connection with the first commercial treaty to be negotiated under the President's "Yankee trading" tariff law.

The first trade pact proposed under the reciprocal tariff law is with Cuba, which has already been given a 1,900,000-short ton sugar quota and ½c. reduction in the sugar tariff. A further cut in the sugar tariff as a "swap" for Cuban imports of United States products is proposed. Indications are that another ½c. is to be shaved off the Cuban tariff.

At hearings which opened before the newly organized Committee for Reciprocity Information in Washington July 24, Louisiana sugar-cane producers protested against more favorable treatment for the island's sugar. They contended that, under the recent sugar quota law, Cuba is given a virtual monopoly on the raw-sugar market in the United States during the remainder of this year.

The Louisiana cane growers were joined by beet producers, Puerto Ricans and domestic refiners in their request that Cuba be made to take any preferential accorded the island on sugar and that it not be allowed to use the preferential to undersell sugar from other areas. Domestic refiners requested that the new treaty include a definite dif-

ferential between the tariffs on raw and "direct-consumption" sugars. They also asked that the situation allowing imports of sugar syrups and invert sugar at a tariff rate ¾c. below refined sugar, with which they compete, be remedied. A differential between the raw and direct-consumption tariff will be provided for, it is authoritatively reported.

Importers and refiners of Cuban direct-consumption sugar argued against establishment of a differential in the tariffs on raw and refined sugar. They contended that because Congress has limited Cuban direct-consumption-sugar imports to 22 per cent of the total allotment for the island in the sugar quota law, there is no need for a differential. The domestic producers' argument is that the direct-consumption sugar which Cuba will be allowed to ship is enough to set the market price here.

Meanwhile, the threat of Hawaiian sugar producers to take the sugar allotment law to the courts on the ground of discrimination and to test its constitutionality remains dormant.

At the reciprocity committee's hearings, protests against favors to Cuba also were entered by fruit and vegetable growers. Any tampering with the tariff on Cuban fruits and vegetables, they said, would drive American producers out of business.

More Marketing Agreements Approved and Amended

Apparently, the drought has not taken care of all the crop surpluses. Anyway, A.A.A. continues to set up and revise marketing agreements and licenses. A license for the California cling-peach-canning industry became effective July 12 following approval of a one-year marketing agreement signed by 86 per cent of the industry. The license and agreement provide for issuance of certificates to growers for the quantity which they may sell for canning and binds the canners to purchase only from certified growers.

To strengthen the crop- and price-control program covering the rice industry in Louisiana, Arkansas and Texas, the growers and millers have entered into an amended and strengthened agreement. Under this plan, millers will pay farmers a set of fixed prices, prescribed by the Secretary of Agriculture, for each grade and variety of rice produced. As their part, farmers will abide by production quotas for the crop of 1934. The millers also have agreed not to sell the processed rice for less than the base price, plus a fixed conversion figure, freight allowances, cost of containers and cost of administering the agreement. Furthermore, the millers will contribute about 1¼c. per bushel to a fund for promoting consumption of rice.

An amendment has been proposed providing for surplus control in the marketing agreement and license for peanut millers which became effective last January, a hearing being held on this July 23. The proposed amendment calls for allotment of the supply of peanuts to the three producing areas and to growers within the areas. It further provides for disposal of surplus by diversion to byproducts.

Secretary Wallace has given final approval to a marketing agreement for early potatoes grown in Florida, Georgia, South Carolina, North Carolina, Virginia and Maryland. This agreement will bring shipments of potatoes more nearly into line with demand. A similar agreement for the Missouri-Kansas potato area has been tentatively approved, and an agreement for fresh peas and cauliflower grown in Colorado has been submitted to the industry.

CONVENTIONS

AUGUST

6-8—Bakers' Association of the Carolinas, annual Battery Park Hotel, Asheville, N. C. E. B. Graeber, 1013 Commercial Bank Building, Charlotte, N. C., secretary.

12-16—National Food Distributors' Association, annual, William Penn Hotel, Pittsburgh, Pa. E. J. Martin, 1104 Franklin St., Chicago, secretary.

23—American Cranberry Growers' Association, annual, Pemberton, N. J. Charles S. Beckwith, Pemberton, secretary.

SEPTEMBER

10-14—American Chemical Society, semi-annual, Cleveland, Ohio. Dr. Charles L. Parsons, 728 Mills Bldg., Washington, D. C.

12-14—American Fisheries Society, annual, Windsor Hotel, Montreal, Canada. Seth Gordon, 919 Investment Bldg., Washington, D. C., secretary.

Standard Brands Loses In Coffee Code Case

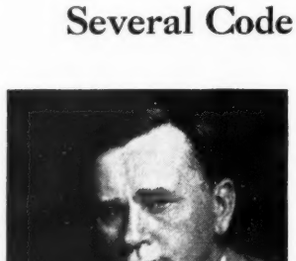
With the smoke of the battle between Coffee Industries Committee and Standard Brands, Inc., having cleared away, there stands out one principle of importance in the enforcement of code cost provisions. In its findings in the case, the National Compliance Council ruled that Standard Brands had violated the code by selling at a price below replacement cost, even though the price was not below the actual cost. However, the decision held that the company was not guilty of "destructive price cutting."

The ruling of the National Compliance Council also required that Standard Brands pledge itself to future compliance with the coffee industry code, and this the company did, expressing its willingness to cooperate with the coffee industry committee and reiterating that it had always been its intention to do so.

The trouble all started when Standard Brands marketed in a special sale beginning April 7, coffee roasted from a green supply purchased on a low market. The price was set at a figure that would make a profit over the original cost, but which did not, in the opinion of the investigating committee, cover cost on a replacement basis as provided for in the coffee code.

The Coffee Industries Committee charged violation of the code, made an investigation and placed the facts before the compliance board. Upon refusal of Standard Brands to disclose its costs, the compliance board ordered an inspection of the company's books.

Several Code Authorities Approved



E. G. MONTGOMERY

Although few new food codes became effective last month, provision was made to enforce several already approved by official recognition of code authorities. The candy code authority, which was approved in June, elected officers, naming as chairman George H. Williamson, head of Williamson Candy Co., Chicago, and president of National Confectioners' Association. The code authority for the canners selected as its executive secretary E. G. Montgomery, former chief of the foodstuffs division of the Bureau of Foreign and Domestic Commerce.

The following are the code authorities approved in July:

BREWING

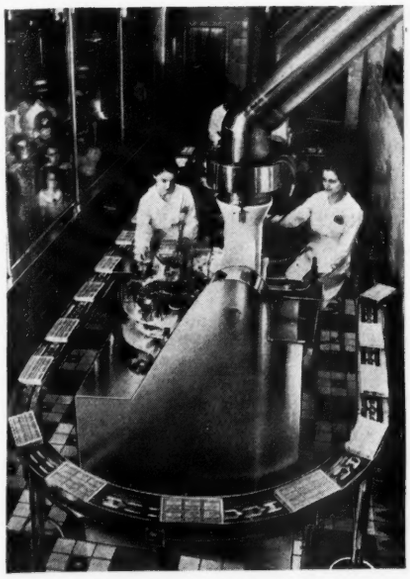
R. A. Huber, vice-president of Anheuser-Busch, St. Louis; A. J. Kugler and Joseph Obergfell, both of Cincinnati; R. J. Schaeffer, Schaeffer Brewing Co., Brooklyn; and G. R. Beneman, Washington.

WINE

S. Federspeil, Colonial Grape Products Co. of California, San Francisco; W. F. Hope, Garrett & Co., Brooklyn, N. Y.; A. R. Morrow, Fruit Industries Ltd., San Francisco; A. B. Tarpey, California Winers and Distillers, Inc., Fresno; E. S. Underhill, Jr., Urbana Wine Co., Urbana, N. Y.

PRESERVE, MARASCHINO CHERRY AND GLACE FRUIT

R. R. Shawcross, A. A. Knights & Son, Malden, Mass.; R. U. Delapenha, New York; J. N. Major, Old Virginia Packing Co., Front Royal, Va.; M. Blackmore, Lutz & Schramm Co., Pittsburgh; J. T. Menzies, Crosse & Blackwell, Inc., Baltimore; O. F. Kline, D. B. Scully Syrup Co., Chicago; L. H. Smith, Bliss Syrup & Preserving Co., Kansas City, Mo.; E. L. French, Francis



PACKAGING "PHILADELPHIA"

Operating a production unit in a glass-inclosed room in the Agricultural and Foods Building at A Century of Progress, Kraft-Phenix Cheese Corp. demonstrates the sanitary methods whereby the "largest selling packaged cheese" Philadelphia cream cheese, is made ready for shipment.

H. Liggett & Co., Landisville, N. Y.; Wm. A. Pruitt, Southern California Preservers' Association, Los Angeles.

COCOA AND CHOCOLATE

John A. Bachman, Bachman Chocolate Manufacturing Co., Mount Joy, Pa.; W. S. Crouse, Hershey Chocolate Co., Hershey, Pa.; E. D. Fieux, Runkel Bros., Inc., New York; C. C. Day, Peter Cailler Kohler Swiss Chocolate Co., New York; A. Ghiradelli, D. Ghirardelli Co., San Francisco; W. T. Jones, Rockwood & Co., Brooklyn; W. C. Drury, Schall Candy Co., Clinton, Iowa.

SPICE GRINDING

J. M. Weyer, Van Loan & Co., Inc., New York; C. A. Thayer, R. T. French Co., Rochester, N. Y.; Wm. G. Volkmann, A. Schilling & Co., San Francisco; J. B. Bond, Wixon Spice Co., Chicago; N. S. Dillingham, D. & L. Slade Co., Boston; M. F. Brinker, Reid, Murdoch & Co., Chicago; J. E. Tone, Tone Bros., Des Moines.

MALT PRODUCTS

H. Perlstein, Chicago, Wm. Klusmeyer, New York; J. G. McMillan, Chicago; C. F. Michel, LaCrosse, Wis.; R. A. Huber, St. Louis.

SOUTHERN RICE MILLING

J. E. Broussard, Beaumont, Texas; F. A. Farda, Houston, Texas; F. W. Rickert, New Orleans, La.; J. T. Trotter, Lake Charles, La.; C. R. Walton, Stuttgart, Ark.; George Smith, DeWitt, Ark.; F. A. Godchaux, Abbeville, La.

Packers' Hearing Shifted

Continuing its case against the twelve meat packers charged with price-fixing, the Department of Agriculture last month shifted the hearing from Birmingham to Memphis. This was the second change of scenery since the hearing started in Jackson, Miss.

More than 100 witnesses testified in Birmingham while the hearing was in session, the majority of them being called to identify invoices which they were alleged to have received from the packers said to have been participating in the combine. The program for the hearing in Memphis is for presentation of the packers' side of the story.

Private Refrigerator Cars Can Be Refused by Roads

Food manufacturers and shippers using refrigerated cars for long-haul distribution may suffer an immediate increase in freight costs. To break up the practice by which shippers lease private refrigerator cars at rentals lower than the mileage allowances paid by the railroads, I.C.C. has authorized the roads to refuse private cars. Even the exception made by the Commission's examiners in favor of meat packers was eliminated in final disposition of the case.

The Commission suggests that the roads pool their refrigerator cars, but to meet the requirements of the big meat packers, they probably will have to buy or lease the large fleets now owned by the packing companies. The Commission does not actually prohibit the railroads from accepting private cars but stipulates that henceforth the carriers may not wink at arrangements in which the mileage earnings of the car are paid by the private owner in whole or in part to the shippers to whom the car is leased, with the result that he receives a rebate from regular rates and also benefits from the advertising with which private cars usually are placarded, to which the I.C.C. also takes exception.

A.A.A. Buys Million Cattle; 400 Canneries Proposed

In excess of 1,100,000 head of cattle had been purchased in the emergency drought areas by the A.A.A. up to July 19. Something less than half this number, however, had been processed.

While the meat from these relief purchases goes to the Federal Surplus Relief Corp. for distribution to the needy and does not enter commercial channels, it, nevertheless, represents a certain drag on the market. And, to make matters worse, the government proposes to establish between 400 and 500 meat-processing and canning plants in the drought States. Officials at Washington would allay the industry's fears with assurance that these measures are merely temporary.

Is Smoke Salt Smoked?

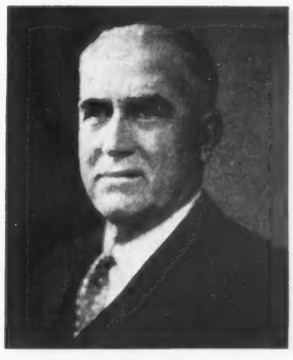
Charges of the Federal Trade Commission against "smoke salt" manufacturers for fraudulent advertising were taken up at a hearing at Madison, Wis., last month. The commission objects to the manufacturers' claims that their products make it unnecessary to smoke meat for curing. Furthermore, it maintains that the salt is not actually treated by a smoking process and therefore is not smoke salt.

The salt manufacturers hold that the label "smoke salt" does not mean that the salt actually has been smoked, but merely designates it as a salt having certain curing properties. The manufacturers involved in the case include Morton Salt Co., Chicago; Myles Salt Co., New Orleans; and Jefferson Salt Co., Louisville.

Dairy Industry on Carpet As F.T.C. Investigates

The Federal Trade Commission's investigation of alleged monopoly in distribution and sale of milk and dairy products got under way late in July when agents were sent into New England and the Middle West. Congress ordered the probe in a resolution adopted last session.

Commissioner Charles H. March, in charge of the inquiry, declared that the



CHARLES H. MARCH

investigation would cover the following factors:

1. Supply and demand of milk and milk products.
2. Cost of producing, distributing, and processing milk and dairy products.
3. Prices of milk to producers and prices of fluid milk and cream to consumers.
4. Spread between producers' and consumers' prices.
5. Acquisitions, consolidations and mergers by companies in the milk and dairy products industries.
6. Concentration of control of markets and prices by corporations or by groups of producers or distributors.
7. Trade practices which may constitute unfair methods of competition or restraint of trade through creation of a monopoly in the various phases of the milk and dairy products industry.

Meanwhile, despite adverse decisions challenging the constitutionality of its milk marketing agreements, the A.A.A. is going on with the pacts with the intention of fighting for them through the Supreme Court.

Federal courts in Chicago and Oklahoma have ruled against the milk marketing pacts, and the A.A.A. has appealed. So far, none of the cases has reached the Circuit Court of Appeals. The Maryland State Court at Baltimore is trying to get Secretary Wallace to appear there personally to defend an action brought against the marketing agreement in that city.

Dairy Sales to Be Boosted By Consumer Education

Convinced that its surplus comes from under-consumption as much as from over-production, the dairy industry plans a little consumer education. National Dairy Council has arranged for a national cooperative campaign to be directed through various channels of education, publication and advertising. In New York, the State itself has taken over the task of building up consumption, appropriating $500,000 to be spent in advertising milk as a valuable food. This expenditure will be covered by a tax of 1c. on each 100 lb. of milk sold by dealers. Distributors will be taxed on milk sold directly to consumers, as will the farmers. And the farmers may be required by the dealers to contribute one-half of their assessments.

Testimony to the possible effectiveness of these advertising campaigns is found in results of the A.A.A. survey of milk consumption; in many of the cities reported on to date, per capita consumption amounts to less than half that recommended for a healthful diet. However, there are those in the dairy industry who are skeptical of the results.

Buyers and Canners Urge More Informative Labeling

Even though the proposed food and drug legislation is temporarily dead, there is agitation abroad for more informative labeling of packaged goods. Purchasing agents of more than 400 cities have asked N.R.A. to make quality labeling of commodities in sealed containers mandatory. This request was incorporated in a resolution passed by the "government group" of National Purchasing Agents' Association in its recent annual convention.

Moreover, one branch of the food industry, the canners, have urged immediate institution of a survey to the end that more informative labeling may be brought about for canned foods, this being requested by the special standards committee appointed under the recently approved canners' code. The committee also asked that federal funds be made available for establishing the grades contemplated by the McNary-Mapes amendment to the Food and Drugs Act. The canners believe that scientific work done in the development and trial of such standards will establish the feasibility of additional standards.

The committee has secured permission to use the services of National Canners' Association to carry on an extensive study of label information, the scope and character of which is to be developed with the advice of the Consumers' Advisory Board of N.R.A. As soon as the results of this survey have been received, they will be incorporated in recommendations to N.R.A.

THOMAS H. McINNERNEY

Regulation Hurts Dairies

As president of National Dairy Products Corp., Thomas H. McInnerney knows conditions in the dairy industry. Before sailing for Europe last month he pictured the situation in these words:

"We have now reached the point in the dairy industry where the rules and regulations designed to stabilize the industry have multiplied to the extent of hampering its recovery. . . . In spite of increased volume . . . our total profits and percentage of profits have not been as satisfactory as our increase in business would ordinarily provide.

"The industry is governed by so many regulatory bodies—federal, state and local—that uniform enforcement has proved to be impracticable. Consequently, responsible companies which complied with regulations find themselves at a serious disadvantage. . ."

Shrimp Packers Will Employ Government Inspection

For a time it looked as if the shrimp packers had, in the recent amendment to the Food and Drugs Act, a privilege which few would put into practice. However, at a hearing on regulations proposed for governing federal inspection, as allowed in the amendment, the packers expressed their intention to employ inspectors to insure a quality product. Outside of murmuring objections to the regulation providing that retorts be equipped with recording thermometers and automatic temperature controls, little adverse comment was made on the requirements for inspection.

Among the restrictions placed on packers employing government inspectors will be the requirement of a definite temperature and time of processing, or the use of an incubation room for testing prior to release of each retort load. The exact procedure has not yet been decided upon. Another requirement will be that any company which wishes inspectors in one of its plants must employ them in all plants. A final draft of the proposed regulations is now being worked out.

At a recent meeting of the shrimp industry, it was decided to continue the shrimp section of National Canners' Association under the same management for another year, Norman Hendrickson remaining director.

Free Sales Instruction

Fifteen minutes of free instruction in how to increase sales of canned foods is being offered to wholesalers and chain-store organizations by Continental Can Co., Inc. It takes the form of a sound-slide-film presentation covering such subjects as how to increase sales with scientific displays, how to approach the retail grocer and how to tie in advantageously with the can company's canned foods campaign.

HORS D'OEUVRES

PEOPLE in San Francisco bought heavily of canned foods during the general strike. Which suggests that canners ought to buy red whiskers and become professional labor leaders. The whiskers could be charged to sales promotion.

•

IF ALL THE BEER sold in New York State in the past twelvemonth were placed molecule to molecule, it would float nineteen of the world's largest steamers. Therefore, how old is Ann? We seem a bit mixed up, but, anyway, Ann's age worries her more than the fact that 6,203,000 bbl. of beer was guzzled.

•

EVERY TIME we see a certain coffee ad we think of morons. The ad would have the public know that family fights result from drinking stale coffee. The ad should be worded: "Flowers will catch a wife, but it takes fresh coffee to keep her."

•

CHERRY-FLAVORED dill pickles are packed by a small Wisconsin concern. Leaves from the wild cherry tree flavor the product. . . . A friend of the great clan of spinach haters has invented a spinach loaf which disguises the grass with beef. . . . Florida's rejuvenating fruit, the papaya, is being made into a beverage by Pa-Poya Co. One drink and an old lady will think she's Mae West!

•

A FLOATING FACTORY for shark will be put into operation this fall by Capt. Wm. E. Young, author of "Shark! Shark!" A fleet of motor boats will bring the catch, expected to be 50 a day, to a schooner, where they will be converted into oil, leather, fins, meal and even dried and salt shark meat. Some fun, eh?

Strikes More Numerous In Food Industries

Probably inspired by the labor fiasco on the Pacific Coast, organized workers in the food industries caused more trouble during July than for some months past. They became quite hard-headed in the stockyards of Chicago, walking out on July 24 when the pens were jammed with 80,000 head of cattle half starved by the drought, leaving the animals with no one to care for them when the temperature stood at 105. A similar situation threatened in the stockyards at St. Joseph, Mo.

Earlier in the month, employees at Seabrook Farms, Bridgeton, N. J., went on a two-week strike during which they engaged in pitched battles with the police. The trouble finally ended when Charles Seabrook, owner of the 5,000-acre farm and cannery, rehired the strikers on the basis of their former wage scale and agreed not to discriminate against the trouble makers and to appoint a board to settle disputes.

Dissatisfied labor troubled meat packers at two widely separated points. Cudahy's Salt Lake City plant had to guarantee employees a wage adjustment within ten days, giving them the right to select their own representatives and assuring that there would be no discrimination. Settlement was also effected of a strike at the David Davies Packing Co., Columbus, Ohio. The company agreed to reinstate discharged employees, distribute working hours equitably, recognize the union and settle all misunderstandings by arbitration.

In Cincinnati, employees of Klosterman's French Baking Co. forced officials to agree to a wage increase of 20 to 30 per cent, recognition of the union, payment of regular union wages later on and enforcement of a five-day week.

Striking drivers and other employees in the dairies of South Bend and Mishawaka, Ind., cut off milk deliveries from 35,000 customers. To settle the trouble, dairy owners guaranteed the drivers a $20 minimum weekly wage and the plant and route foremen a $32.50 minimum. A board of arbitration also was provided for. However, an "open shop" was maintained. Home Ice Cream & Ice Co., East St. Louis, Ill., also had to increase wages to get back 32 striking employees, signing a year's contract with the union to that effect.

Mound City Macaroni Co., St. Louis, refused to meet demands of 300 strikers for union recognition, even after they had dropped an earlier demand for a 10 per cent raise in pay.

Trouble occurred in the live poultry industry of New York, N. Y., in the form of a buyers' strike between retail and wholesale slaughter houses against the New York Live Poultry Commission Merchants' Association. The strike seriously injured the poultry business in the city. It was directed against alleged exorbitant trucking charges, coop hire and feed costs.

Pecan sellers took part in the San Francisco general strike, and there was another group, 8,000 strong, in San Antonio, which demanded increased wages.

Accidents in Food Plants More Frequent, Severe

Food manufacturers have a poor accident record for 1933, according to figures issued by National Safety Council. The frequency of disabling injuries increased 8 per cent over 1932, and the severity rate rose 13 per cent. The entire industry averaged 15.96 for frequency and 1.22 for severity in 1933.

Compared with other industries, food had a higher frequency rate than chemical, machinery and steel. The severity rate, however, compares more favorably, being below that for the chemical and steel industries, although higher than that for machinery. Among the various branches of the industry, beverage companies had by far the highest accident frequency rate, the figure being 68.32. The lowest was in bakeries, which had 8.47, and coming in between were confectionery manufacturers, with 11.45; corn products manufacturers, with 11.84; and dairy companies, with 21.05. Confectionery manufacturers had the lowest severity rate, it being 0.18, while sugar refineries and corn products manufacturers had the highest rate, with 2.09 and 3.81, respectively.

Handling of objects was the most important type of accident in food manufacturing, accounting for 28.9 per cent of all cases. About half as many were the result of machinery accidents, closely followed by falls (on the same level).

The 1933 safety honor roll for the food industries includes the following:

BAKERIES—Haller Baking Co.; Nolde Bros., Inc.; Grennan Bakeries, Inc.; B. Markowitz Baking Co.; Braun Baking Co. CANNING AND PRESERVING—Fairmont Canning Co.; Central Wisconsin Canneries, Inc. CEREAL MANUFACTURERS — Ralston-Purina Co.; General Mills Co., Inc. CONFECTIONERY MANUFACTURERS—Robert A. Johnston Co.; Thomas B. Richardson Co. CORN PRODUCTS—Union Starch & Refining Co. DAIRY PRODUCTS—Bowman Dairy Co.; Borden Co.

CONCENTRATES

American Association of Creamery Butter Manufacturers is pushing its campaign for better cream quality and is endeavoring to enlist the aid of State authorities. . . . Olive packers are required to adopt shorter necked bottles under new regulations of the Food and Drug Administration, and the olives must be labeled to show the weight of the drained olives, not brine. . . . Southwestern railroads have agreed to reduce rates on canned foods shipped from the Mid-West by 4 to 7c. per 100 lb.

Transcontinental railroads have established a lower canned-food rate of 80c. per 100 lb. on cars of 60,000 lb. and 90c. on those of 40,000 lb. . . . Irradiated Evaporated Milk Institute has been organized by Borden, Carnation, Pet, Nestlé and Indiana for scientific research and trade promotion. . . . The next annual convention of the canning industry will be held in Chicago the week of Jan. 14. . . . A practical course in use of scientific methods in beverage manufacture will be given at the convention of American Bottlers of Carbonated Beverages in Buffalo, Nov. 12 to 16.

Siebel Institute, Chicago, announces a two months' intensive course in baking technology to begin Oct. 1, the course being for scientific training of practical bakers. . . . New York State Perishable Fruit Commission is considering a publicity campaign to promote consumption of perishable fruits. . . . Brazil Nut Advertising Fund has been organized to promote the year-around sale of Brazil nuts.

SHOWING THEM HOW IT'S DONE

In its extensive exhibit at the World's Fair, Continental Baking Co. operates a complete commercial bakery. Consumers see the "staff of life" take form as it moves through the various processing units from the flour blender to the wrapping machine.

MEN . . . JOBS . . . AND COMPANIES

Industry

AMERICAN CONE & PRETZEL CO., St. Louis, has completed a new 3-story building costing $200,000, into which it will move shortly.

ARCADY FARMS MILLING CO., Chicago, is planning to spend $100,000 in rebuilding its elevator recently destroyed by fire.

ARMOUR & Co. reorganization plans, adopted by vote of the stockholders, provide for a slash of $55,370,000 in assets value on the company books; a new issue of prior preferred 6 per cent cumulative stock with which to retire the present 7 per cent preferred stock; and a new issue of common stock, two shares of which will be given in payment of back dividends on preferred shares, and one share for each "A" share and one share for two "B" shares.

BONOMO NUT PRODUCTS CORP., New York, renamed Bonomo Candy & Nut Corp., will concentrate its manufacturing operations in the plant formerly owned by Joseph G. Dubin & Sons, Brooklyn.

CANNON VALLEY MILLING CO., Cannon Falls, and Northwestern Milling Co., Little Falls, Minn., recently consolidated, will retain their individual names and functions.

CASTLEBERRY'S FOOD CO., Augusta, Ga., will soon begin the manufacture of peanut butter with plant equipment purchased from Socconut Products Co., Columbus, S. C.

CRANBERRY CANNERS, INC., South Hampton, Mass., plans to erect and operate 100 roadside stands between Philadelphia and Portland, Me., for selling and advertising "Ocean Spray" cranberry cocktail.

JACOB E. DECKER & SONS is opening a branch packing plant at Greenville, Miss., in the former Armour & Co. warehouse.

FOODCRAFT PRODUCTS CO., Los Angeles, is restrained from using the brand name "Wonder Whip" on its products as a result of a suit brought by Kraft-Phenix Cheese Corp.

FOX RIVER CANDY CO., Chicago, will build an addition to its Elgin (Ill.) plant at a cost of $45,000.

GLIDDEN CO., Cleveland, is installing a 100-ton soy bean unit in its Chicago plant, with operations scheduled to begin Oct. 1.

HOME PACKING & ICE CO., Terre Haute, Ind., after being forced to suspend operations by a strike of meat cutters, will be closed permanently, it has been reported.

INDEPENDENT PACKING CO., Chicago, is rebuilding its plant, recently destroyed by fire, at a cost of $100,000.

J. B. INDERRIEDEN plant, Rice Lake, Wis., has been expanded and new equipment added, increasing capacity about 40 per cent.

K & B PACKING & PROVISION CO. plant, Denver, destroyed by fire July 8 at a loss of $150,000, will be rebuilt.

KRAFT-PHENIX CHEESE CORP. has completed plans for a cheese plant at Searcy, Ark., which will have a daily capacity of 50,000 lb. of milk.

LANGENDORF BAKERIES, INC., Seattle, last month completed a new cake kitchen costing $150,000.

MODEL FARMS DAIRY, Washington, D. C., is producing milk fortified with 405 U.S.P. units of vitamin D, using the Clo-Dee process.

POTATO PRODUCTS CO., Atlanta, Ga., has announced plans for a plant at Quitman, to cost $268,000 and to be used for making starch from yams. Plans for the establishment of what would be a new basic industry provide for the construction of 40 factories in the Southeast, ten of them in Georgia.

PRICE CONTROL and executive committee members of Georgia-Carolina Wholesale Milk Producers' Association have approved plans for a cooperative creamery costing possibly $200,000.

RAMER-LANE COFFEE CO., Memphis, Tenn., has completed expansion and machinery installations to bring its daily capacity up to 20,000 lb.

RANDALL DAIRY CO., East St. Louis, was awarded damages of $26,000 in its suit against Pevely Dairy Co., in which it was charged that an agent for the latter slandered the plaintiff in soliciting new business.

RED TOP BREWING CO. and RED TOP MALT CO., Cincinnati, have won a suit against Elk Brewing Co., Kittanning, Pa., to prevent the latter company from using the trademark "Red Top."

RICHLAND APPLE CORP., Winchester, Va., has moved its baked-apple canning equipment to Richland, Wash., where the variety for baking and canning is grown in larger quantities.

SALIVER CO., INC., Astoria, Ore., recently combined with Astoria By-Products Co., will produce salmon oil for medicinal use, as well as other salmon byproducts.

SOYBEAN PRODUCTS CO. is planning to establish a processing plant at Cedar Rapids, Iowa, the products to include confections and a butter substitute.

SPEAS MANUFACTURING CO., St. Louis, plans to build a vinegar, pectic and carbolic-acid plant at Lyndonville, N. Y., to cost $75,000.

SPRECKELS SUGAR CORP., in receivership since January, 1932, has filed a petition to reorganize under Section 77-b of the National Bankruptcy Act.

M. L. WILSON

Once professor of agricultural economics at Montana State College; first director of the A.A.A. wheat administration and later head of the Subsistence Homesteads Administration; also co-author of the acreage allotment plan, he has been appointed Assistant Secretary of Agriculture.

STANDARD BRANDS, LTD., has granted a fellowship to Dr. Lash Miller, University of Toronto authority on bios, to continue on a larger scale laboratory studies on the chemistry of the biological products which stimulate yeast growth.

TENNESSEE DAIRIES plant, Decatur, Texas, will be remodeled for the installation of a cheese plant and the capacity increased to 60,000 lb. of milk daily.

TOVREA PACKING CO., Phoenix, Ariz., plans to spend $40,000 on plant expansion.

WEBER KRAUT & CANNING CO., St. Louis, is building a two-story addition to its plant, costing about $7,500, to be used as a warehouse and canning department.

TRAVER SMITH

Vice-president, Standard Brands, Inc., in charge of Chase & Sanborn affairs. He was one of 13 representatives of Associated Coffee Industries of America who sailed July 21 on a good-will tour to Brazil.

JULIUS FLEISCHMANN

Grandson of Charles Fleischmann, founder of the yeast business in 1868, and one of the largest stockholders in Standard Brands, Inc. He has been elected to the board of directors of that company.

PERSONNEL

E. W. ABELL is president, Kentucky Brewing Co., Louisville, which recently began operations in a new plant. Frederick J. Broxterman is brewmaster.

RAY C. ALBAN, formerly with Burrus Mill & Elevator Co., Kingfisher, Okla., has opened Cereal-Protein Laboratory, Enid, Okla.

M. D. BENEDICT, formerly at the Tupelo (Miss.) plant, Carnation Milk Products Co., has been transferred to the Gustine (Calif.) plant.

FRED BORDEN, with Red Star Milling Co. for 16 years, has been appointed manager of the Little Rock (Ark.) branch.

EDWARD R. BOYLAN, New York, who has been engaged in the maple sugar and syrup producing business for some time, has been appointed administration member of the code authority for the paper-disk-milk-bottle-cap industry.

C. A. BUSH has been appointed manager of the New Bedford (Mass.) Standard Brands office, succeeding Walter Carney, resigned.

P. A. CARNEY, with Cudahy Packing Co. for the past 25 years, has succeeded J. M. Stafford as superintendent of the Sioux City (Iowa) plant; the latter is now assistant general manager of the company at Omaha.

FRED B. CHILDS, assistant to the president of Libby, McNeill & Libby and N.R.A. adviser, has been elected president of his firm. He formerly served Libby as head of the milk department, becoming assistant general superintendent in 1923.

ARTHUR S. COFFIN, manager, California Sardine Products Institute, resigned July 15.

J. H. DEMPSEY, former superintendent of the Pittsburgh (Calif.) cannery, F. E. Booth, Inc., is now superintendent, E. B. Cross Canning Co. plant, Monterey.

H. L. FREEBORN, formerly with Quaker Oats Co. and Bakers Specialty Co., Inc., is now with Pure Made Products Co., Newark, N. J.

G. E. ENGLAND and CHARLES TUCKS are in charge of the new canned-meat department of Agar Packing & Provision Co., Chicago. JOHN DALY is in charge of production, including sausage, corned beef hash, spiced ham and other products.

LON P. FLANAGIN, Seneca Kraut & Pickling Co., Geneva, N. Y., was re-elected president of the National Kraut Packers' Association at the annual meeting at Sandusky, Ohio, July 11.

LAURENCE P. GEER, former resident associate, Massachusetts Institute of Technology, is now chief chemist, Alo Co. of America, Tampa, Fla., manufacturer of soft drink syrups and concentrates.

F. E. HAWLEY, former manager, Stokes Milling Co., Watertown, S. D., and former code director of one of the branches of the paper industry, has been appointed code director for the Northeastern milling region with headquarters at Buffalo.

HOWARD HEINZ, president, H. J. Heinz Co., Pittsburgh, was elected chairman of the National Industrial Conference Board last month.

CHARLES E. HERRICK, president, Brennan Packing Co., Chicago, an executive of that firm for more than 28 years, has resigned, effective Sept. 1. He was second president of the Institute of American Meat Packers, succeeding Thomas E. Wilson, and was a director of the American Meat Packers' Association.

THOMAS F. LENNON, manager, Anheuser-Busch Rochester (N. Y.) branch, has been appointed district manager at Buffalo, succeeding William R. Casey, resigned.

CHARLES W. KRAFT, former general manager in the Wausau, Wittenberg and Antigo (Wis.) areas, has been appointed assistant to E. S. Stranz, general manager, Kraft-Phenix European Division, with headquarters in London.

OSCAR L. MCGEE, formerly with Freeport (Ill.) Baking Co., is now contacting Eastern bread bakers for Nulomoline Co., New York.

STUART P. MCDONALD, Frosted Foods Sales Corp., is engaged at the present time in research studies in cooperation with the New York Agricultural Experiment Station staff at Geneva, N. Y.

DOUGLAS L. MCINTYRE, formerly with Doughnut Corp. of America and former manager, Parkway Baking Co., Camden, N. J., is now with Peerless Bread Machine Co., Sidney, Ohio.

CHARLES H. MERERING, founder of Innovation Bakeries, has been elected president, Cushman Sons Bakeries, Chicago, the name of which has become Cushman Innovation Bakeries.

E. P. MILLER, General Ice Cream Corp., Schenectady, N. Y., is author of "Merchandising Malted Milk Drinks and Ice Cream Sodas at the Soda Fountain," published in booklet form by International Association of Ice Cream Manufacturers, Washington, D. C.

A. H. MINOR, until recently chemist at the Alva (Okla.) plant, Kansas Flour Mills Corp., is chief chemist, Paterson Laboratories, Hutchinson, Kan.

A. D. RADEBAUGH, former crop specialist, American Can research department, Maywood, Ill., is now supervising control of all products of Blue Mountain Canneries, Dayton, Wash.

ALBERT T. SMITH, Smith Canning Co., Clearfield, Utah, has acquired the Brigham City canneries formerly operated by the late John L. Pierce.

HUGH SCILLEY is manager, Loveland Canning Corp., Denver, succeeding Elmer Ivers, resigned.

PAT J. TAFT, deputy N.R.A. administrator until June 15, has succeeded Olin M. Jacobs as manager of the industrial recovery division of the National Confectioners' Association.

FRED WADWITZ has been appointed

M. L. LIVINGSTON

Continental Baking Corp. head passes

JOHN W. TOLLEY

Former Ward Baking Co. executive dies

manager of National Biscuit Co. offices, Sacramento, succeeding H. M. Weller, who has been transferred to the Salt Lake City office.

TED R. WARREN, formerly in partnership with C. O. Adair, in operating Vici (Okla.) Roller Mills, is now chemist at Burrus Mill & Elevator Co., Kingfisher, Okla., a position which he left about one year ago.

C. F. WEISMANN, formerly with the New York office of the Borden Sales Co., was recently appointed manager of the new branch wholesale office at Springfield, Mass.

HARRY W. ZINSMASTER, president, Zinsmaster Bread Co., Duluth, has resigned as president, treasurer and director of Zinsmaster Breads, Inc., Des Moines, to devote all his time to the former company.

DEATHS

SCOTT BARTON, superintendent, Ladoga Canning Co. plant, Brookston, Ind., at Indianapolis June 30. He had been with the company since 1932.

JOHN C. BUCHANAN, 83, for 25 years with Central Elevator Co., at Minneapolis July 5.

ELMER G. CASE, board chairman and president, Case Moody Pie Corp., Chicago, at Chicago July 12. He committed suicide.

GEORGE W. COLLIER, 73, director, Boston Grain & Flour Exchange, at Cohassett, Mass., July 3.

CARL FOWLER, executive vice-president, Wilson & Co., Chicago, at Park Ridge, Ill., June 31. Formerly with Morris & Co., for the past three years he had been in charge of the Wilson sales division.

CHAUNCEY GLEASON, 68, treasurer, New England Milk Producers' Association, at Haverhill, Mass., July 3.

A. F. GOODWIN, 61, chairman of the board, First National Stores, Inc., Boston, at Hamilton, Mass., July 24. He served on the executive committee of the board of directors, Food and Grocery Chain Stores of America, Inc., and was vice-chairman on the national advisory board of the food industry until the national code for distributors was completed.

JAMES V. HOPKINS, 38, secretary, West Virginia State Dairymen's Association, and state dairy extension specialist, at Huntington July 2.

M. L. LIVINGSTON, 53, president, Continental Baking Corp., at New York July 17. After starting with Livingston Baking Co., Chicago, a family business, that company merged with the Continental in 1925, and Mr. Livingston took charge of its Chicago bakeries. In 1926 he was elected president of the company, and took charge of national operations, with headquarters in New York.

BEN R. MACELVAIN, 62, Noblesville (Ind.) Milling Co., at Noblesville June 27.

WALTER H. PRATT, 59, organizer, Cleveland Bread Co., and director, Liberty Baking Corp., New York, at Cleveland June 25. One of the organizers of General Baking Co. in 1911, he managed its Cleveland plant until 1926.

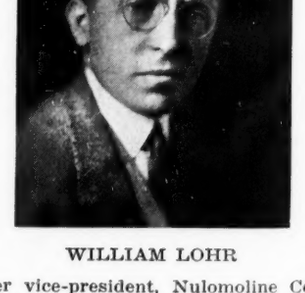
A. F. RICHTER, 68, president and general manager, Greenville (Texas) Mill & Elevator Co., at Greenville July 9. He helped to organize his company in 1900.

WILLIAM H. SHURTLEFF, for 30 years president, W. H. Shurtleff Co., Bangor, Me., cured and salt fish packers, at Portland July 11.

JOHN W. TOLLEY, 68, associated with Ward Baking Co. since its inception 46 years ago, at Goshen, N. Y., July 5. He was regarded as an authority on bread-dough fermentation, and had invented and developed bread-wrapping machinery, nearly all such equipment in the Ward plants having been developed and applied under his supervision. He retired as vice-president of the company in 1929.

Associated Industries

BAKERY EQUIPMENT manufacturing industry code, supplementing the approved code for the machinery and allied products industry, was approved July 13 and became effective July 24. It includes the labor provisions of the basic code, and provides for a code authority of five, one of whom must be a representative of the members of the industry who are non-members of the Bakery Equipment Manufacturers' Association.



WILLIAM LOHR

Former vice-president, Nulomoline Co., he has been elected president, succeeding C. W. Taussig, new chairman of the board. James A. King, sales manager, and R. S. Taussig, manager, Chicago branch, have been made vice-presidents.

WILSON & BENNETT MANUFACTURING CO., Chicago, has announced the establishment of a chemical research department for the development of interior coatings and liners for steel containers.

MANTON-GAULIN MANUFACTURING CO., formerly at St. Johnsbury, Vt., is now located at Everett, Mass.

B. B. RUSSELL, vice-president, Drying Systems, Inc., Chicago, has succeeded C. H. Currier, resigned, as general manager.

UNION CONFECTIONERY MACHINERY CO., New York, has acquired and will sell from the floor the plant equipment of Charles Adams & Co., Inc., Lancaster, Pa.

VOGT INSTANT FREEZERS, INC. Louisville, has assigned all obligation and assets to Vogt Processes, Inc., as a result of the merger of the two companies late in June.

BUSINESS TRENDS

Butter Output Declines; Cheese Stocks Rise

Creamery butter production in May registered the fifth monthly decrease under last year, and brought the total decrease under the first five months of 1933 up to 63,500,000 lb. Production in May was estimated at 174,692,000 lb., 16,500,000 lb., or 8.7 per cent, less than in May, 1933. Reduction in output took place in all but six States, the largest reductions occurring in the States hardest hit by the drought. Decreases in Minnesota, Wisconsin and Iowa totaled 9,500,000 lb., and amounted to 14.3, 12.3 and 10.4 per cent, respectively.

American cheese stocks on June 1 were 58,000,000 lb., 16,550,000 lb. more than a year earlier and 11,000,000 lb. above the average, the large increase being considered the result of prices more favorable to cheese than to butter producers. Cheese consumption, however, was 2.0 per cent greater in May than the previous year, while butter and evaporated-milk consumption were 3.7 and 24 per cent lower, respectively. Evaporated-milk production in May was 189,000,000 lb., compared to 214,000,000 lb. last year, a drop of 12 per cent.

BASIS FOR THE CURVES

Retail food prices, factory employment, factory payrolls and wholesale prices are based on indexes of the Department of Labor. Cost-of-living index is that of the National Industrial Conference Board. Electrical power consumption figures are furnished by *Electrical World*.

Grains and Food Up

Agricultural and food commodity prices for the four-week period ending July 14 showed further evidence of an upward trend, with advances scored in the latter half of the period reflecting further bullish reports of drought damage in the producing areas. Industrial materials, on the contrary, showed weakness, probably resulting from diminishing demand and from predictions of a full seasonal recession in business activity.

Business activity, although generally below that of July last year, when it was stimulated by recovery measures, showed some cheerful figures for the first two weeks of July. Car loadings, electric-power output, bituminous coal output and auto production all maintained high levels, and steel recovered somewhat from the sharp curtailment at the end of the second quarter.

The Business Week Index of business activity stood at 61.1 per cent of normal for the week ending July 14 —5.0 per cent below the June 16 figure.

Wholesale prices reported by U. S. Department of Labor for the month ending July 21 rose 0.5 to 75.1 per cent of the 1926 average from the June 16 figure. During the month a new high since April, 1931, at 75.1, was set on July 21; farm products rose 2.0; foods, 1.0 per cent.

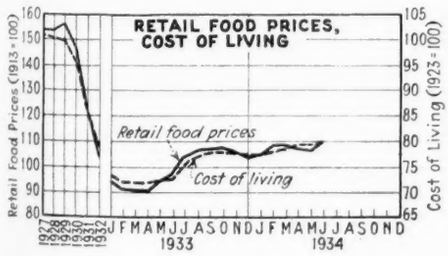
All commodities during the month ending July 28 fell 0.5 per cent to 76.2 in the New York *Journal of Commerce* weighted price index, but were at one of the high points since July, 1930. Grain rose 9.4; food, 1.6 per cent.

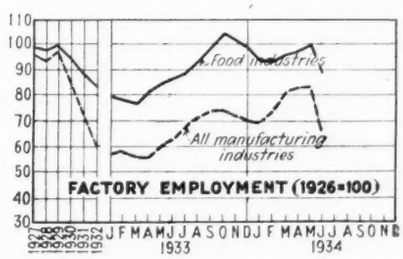
Grain Crop Forecast Cut To 25-Year Low

Smallest grain crops in a quarter century, forecast by the Federal Crops Reporting Board on July 10, will include an estimated combined winter and spring wheat harvest of 483,622,000 bu., compared to 527,978,000 bu. last year, the smallest crop since 1893, and to 886,359,000 bu., the average for 1927-1931. This forecast, compared to that of May 1, indicates that damage done by the drought to wheat alone during the two months reached 155,000,000 bu., about 70,000,000 bu. of winter wheat and 85,000,000 of spring wheat having been destroyed.

Predictions for other grain crops were equally bullish, with corn production estimated at its lowest, except for 1930, since 1894; the yield per acre for oats put at its lowest for 44 years; the yield per acre of rye estimated at its lowest on record; and the barley crop predicted to be the lowest since 1919.

According to agriculture authorities, there need be no fear of shortages for domestic requirements. In the case of wheat, the predicted harvest plus the carryover from last year of 260,000,000 bu. would be ample for domestic needs, usually totaling about 625,000,000 bu. One significant fact does not appear in this opinion, however—the probable shortage of semolina for macaroni manufacture. With a crop of 6,500,000


RETAIL FOOD PRICES, COST OF LIVING
Retail food prices (1913=100)
Cost of Living (1923=100)
Retail food prices
Cost of living
1927 1928 1929 1930 1931 1932
J F M A M J J A S O N D J F M A M J J A S O N D
1933
1934


Food industries
All manufacturing industries
FACTORY EMPLOYMENT (1926=100)
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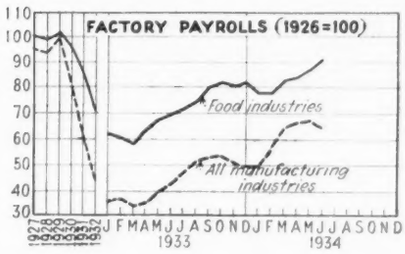
FACTORY PAYROLLS (1926=100)
Food industries
All manufacturing industries
1927 1928 1929 1930 1931 1932
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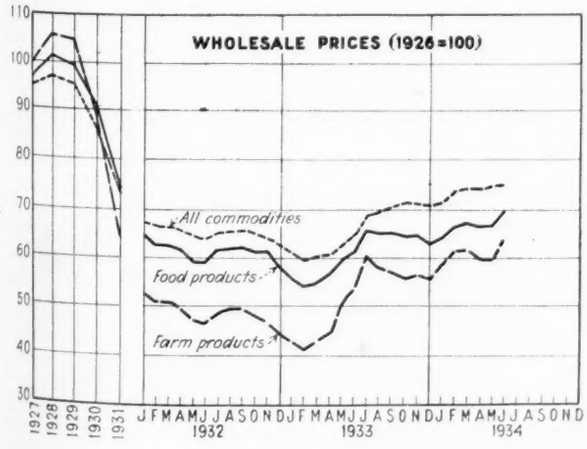
WHOLESALE PRICES (1926=100)
All commodities
Food products
Farm products
1927 1928 1929 1930 1931
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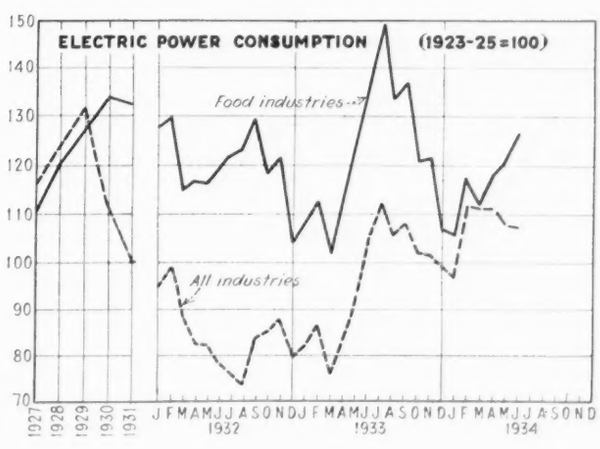
1932
1933
1934


ELECTRIC POWER CONSUMPTION (1923-25=100)
Food industries
All industries
1927 1928 1929 1930 1931
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1932
1933
1934

bu. of durum wheat forecast, compared to last year's below-normal crop of about 20,000,000 bu., it seems probable that durum suitable for making No. 1 semolina will have to be imported, possibly from Canada or South Africa.

World wheat prospects are reported to be below those of last year, both for importing and exporting nations, with European crop estimates 350,000,000 bu. less than on May 1 and with Russian and Canadian crops below normal.

Canning Crops Picture Has Motley Aspect

Canning crops, which were predicted on May 1 to produce large surpluses of canned foods and on June 1 to be headed for ruin, will likely not fulfill either prediction, according to recent authoritative opinion. Although the outlook for canning crops generally is by no means clear for the country as a whole, there is an opinion that some crop harvests may be close to normal. Large acreages reported for such crops are balanced by reports of conditions below normal for July 1. For example, tomatoes, to which 39.2 per cent greater acreage was planted this year than in 1933, had a condition of but 83 per cent of normal for July 1. Figures for estimated acreage and condition of some canning crops are as follows:

	Per Cent Acreage Over 1933	Condition Per Cent of Normal
Sweet corn	52.7	79.9
Tomatoes	39.2	83.0
Beets	34.5	76.3
Cucumbers for pickles	34.8	80.2
Lima beans	43.2	85.6
Cabbage for kraut	58.5	75.3

Any general survey of the country-wide canning crops outlook must necessarily include widely diverse conditions, such as the early fruit and vegetable crops on the West Coast; the oversize output of the South; the better than normal conditions in the Tri-States and some of the New England States; and the poor condition of early crops along with the damaged condition of late crops in the Middle West. Significant during the past two months were the larger-than-normal shipments into Mid-Western markets of products from both Eastern and Western States; these were sold at higher prices than in their usual markets, and helped to clear production or storage surpluses in the regions where they were grown.

Ice Cream Sales Jump

Ice cream sales which showed increases in each of the last four months of 1933 over the corresponding months of 1932, continued to increase during the first four months of this year, registering a gain for each month over that month the previous year and a total gain for the period of 18.14 per cent. For the first time in the past eight years, every State in the Union showed an increase for a four-month period over the same period of the preceding year. Sales increases in January and February were the first for those months since 1930, while increases for March and April were the first for those months since 1929. Sales were up 5.46 per cent in January, 1.85 in February, 30.18 in March and 27.75 in April. It is significant that sales during these months usually represent about 20 per cent of the total volume for the year. Figures are reported by the statistical and accounting bureau, International Association of Ice Cream Manufacturers.

Heavier Loadings Forecast

Commodities moving from the thirteen regional districts of the country during the third quarter of this year are expected by the Shippers' Advisory Boards to require 4.5 per cent more space than did the same 29 items in the third quarter of 1933. Despite a total increase in space needed for shipments from the Northwest region, grain is estimated to require 45.1 per cent less space than in the previous third quarter; potatoes, 66.0 per cent less; sugar, syrup and molasses, 19.9 per cent less; and canned foods, 15.0 per cent less. The central western region is expected to require 113.9 per cent more space for fresh fruits other than citrus, but 24.3 and 12.8 per cent less for grain and canned foods, respectively. Livestock shipments are expected to require 6.0 per cent less space for the country as a whole, while poultry and dairy products are expected to require 6.0 per cent less.

INDICATORS

REFINED SUGAR EXPORTS during the first five months of this year were 22,093 long tons, 50 per cent greater than for the same period in 1933 and the largest for the period since 1930. World consumption of sugar during the crop year ending Aug. 31 is expected to exceed production by 896,000 tons, reducing world surplus stocks by that amount.

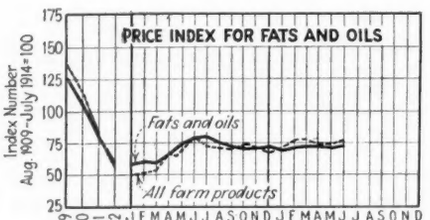
INSPECTED SLAUGHTER OF CATTLE for the first six months of this year, totaling 4,880,463 head, with the exception of 1918, was the largest for the period on record. The total for June, 931,970, was the peak figure for that month on record, comparing with 751,115 for June last year and 669,213 for the June five-year average.

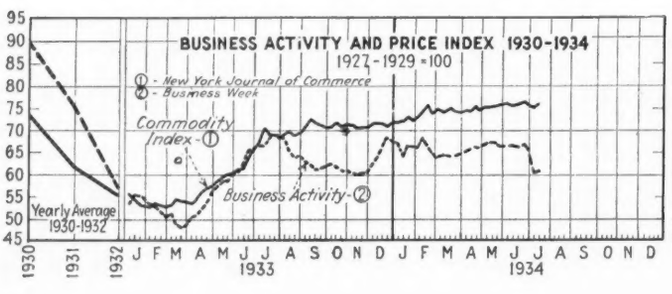
SPRING PIG CROP REPORTS of June 1 estimate a production of 37,427,000 head, 28 per cent less than last year. Sows to farrow in the fall are estimated at 3,132,000, 38 per cent less than in 1933.

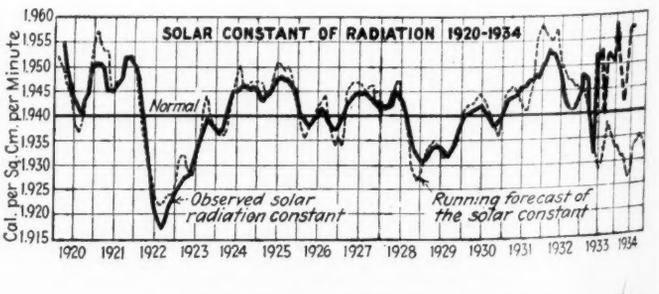
BISCUIT AND CRACKER EXPORTS from the United States during the first quarter of this year weighed 1,424,210 lb. and were valued at $196,208. Last year first quarter exports totaled 1,071,773 lb. and were valued at $145,613.

CONSTRUCTION NEWS

	Pending (thousands)	Awarded July (thousands)	Total Awarded 1934 (thousands)
Bakery Products	$30	$28	$303
Beverages	614	1,048	6,834
Canning and Preserving	121	63	1,034
Confectionery	30	.....	133
Grain Mill Products	1,090	528	3,495
Ice, Manufactured	.....	.....	58
Meats and Meat Products	731	277	533
Milk Products	128	78	1,327
Sugar	.....	60	60
Miscellaneous	153	.....	516
Total	$2,897	$2,082	$14,293







SALAD DRESSING STEPS AHEAD

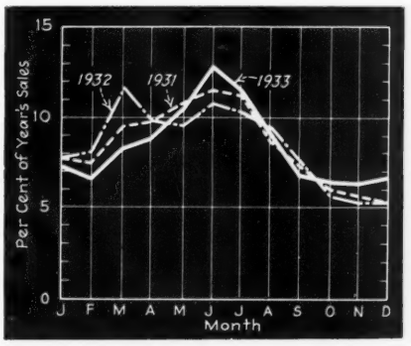
Surpasses mayonnaise in volume
All related products decline

CONTINUING its phenomenal rise by a production increase of 46.9 per cent, salad dressing last year boosted the total output of the mayonnaise industry 8.3 per cent. And for the first time in the history of the industry, salad dressing in 1933 was packed in greater quantities than mayonnaise, the volume amounting to 12,828,475 gal., as compared with 8,174,005 gal. for mayonnaise. All mayonnaise products other than salad dressing suffered substantial declines in production, the percentage decreases being 18.6 for mayonnaise, 9.0 for sandwich spreads and 21.5 for Thousand Island, French and other dressings (see Table I). The total gallonage for all the products came to 23,748,768. These are trends uncovered by the Department of Commerce in its sixth annual survey of the mayonnaise, salad-dressing and related products industry, conducted at the request of Mayonnaise Institute.

The great comparative increase in the production of salad dressing, which brought it from 18 per cent of the total output of the industry in 1930 to 54 per cent in 1933 (see Table II), may be largely attributed to the fact that its low cost fits the depression pocketbook. However, national advertising by some of the larger manufacturers has also had its effect, much space being given to salad dressing. And, apparently, public taste has come to find salad dressing quite suitable as an embellishment for fresh vegetables. Whatever the reason for it, the preference for salad dressing has halted the price decline for that product, the manufacturers' average invoice value for it being $0.81 per gallon last year, as compared with $0.80 in 1932, $1.17 the year before and $1.53 in 1930. The prices of other products of the mayonnaise industry, however, have continued to decline, as may be seen in Table III.

The continued total increase in the production of mayonnaise and related products was attributed in 1932 to the displacement of the output of small enterprises. This probably still holds, the Department of Commerce report states, but analysis of individual returns shows that quite a number of medium- and small-sized companies were able in 1933 to increase their production substantially above their 1932 levels. Another factor bearing on the consistent rise in production which the industry has experienced since it came into existence is the popularity of fresh vegetables.

The survey by the Department of Commerce also reveals two other trends in the industry, these being a continued decline in the importance of wagon distribution and a continued increase in the importance of the quart container. The proportion of the total distributed through manufacturers' own wagons or through wagon distributors decreased from 71 per cent in 1931 and 59 per cent in 1932 to 54 per cent last year (see Table IV). As for the quart container, it has risen from a position of relative unimportance in 1930 to the place where over 30 per cent by volume of the total output was packed in that size last year (see Table V).



Curves representing monthly sales of mayonnaise and related products, expressed in percentage of total sales for the years 1933, 1932 and 1931. The last three months of 1933 show an improvement over the corresponding months of the two preceding years.

Table I—Changes in Production
(Based on figures of 69 concerns)

Product	1933 (1,000 gal.)	1932 (1,000 gal.)	Per cent Change
Mayonnaise	8,174	10,039	—18.6
Salad dressing	12,828	8,732	+46.9
Sandwich spreads	1,980	2,176	— 9.0
Thousand Island, French and others	767	977	—21.5
Total	23,749	21,924	+ 8.3

Table II—1933 Production by Varieties, With Percentage Volume for Preceding Years
(Data for 1933 based on reports of 70 concerns)

Product	1933 Value	1933 Gallons	Percentage by Volume 1933	1932	1931	1930	1929
Mayonnaise	$11,486,528	8,182,559	34.3	45.7	55.4	61.6	63.3
Sandwich spreads	2,224,293	1,992,766	8.4	10.4	12.3	14.1	16.7
Salad dressing	10,149,233	12,881,375	54.1	38.9	26.3	18.4	
Thousand Island	275,802	188,175	0.8	1.1			
French dressing	768,415	477,946	2.0	2.5	6.0	5.9	20.0
Russian dressing	4,813	5,192	....	0.1			
Others	105,314	96,535	0.4	1.3			
Total	$25,014,398	23,824,548	100.0	100.0	100.0	100.0	100.0

Table III—Manufacturers' Average Invoice Value, 1930-33

Product	Dollars Per Gallon 1933	1932	1931	1930
Mayonnaise	1.44	1.53	1.90	2.28
Sandwich spreads	1.18	1.49	1.87	2.01
Salad dressing	.81	.80	1.17	1.53
Thousand Island	1.49	1.62	2.10	2.26
French dressing	1.61	1.77		

Table IV—Channels of Distribution

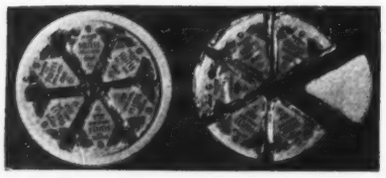
Method	1933 (Gal.)	Per Cent of Total Distribution 1933	1932	1931	1930
Direct to retailers through own wagons or wagon distributors:					
(a) to chain stores	4,560,447	19.5	20.3	29.2	21.7
(b) independent stores	8,121,459	34.7	38.5	42.0	45.0
Direct to retailers in other ways	282,622	1.2	3.5	1.0	0.8
Direct to wholesale grocers	2,823,270	12.1	10.6	10.1	12.3
Direct to chain stores	6,629,539	28.3	26.4	17.1	19.9
Other ways	995,056	4.2	0.7	0.6	0.3
Total	23,412,393	100.0	100.0	100.0	100.0

Table V—Pack by Sizes of Containers

Container Size	Quantity Packed, 1933 (Gal.)	Per Cent of Total Packed 1933	1932	1931	1930
3-fluid oz.	489,627	2.1	4.1	7.3	8.1
8-fl. oz. or half-pint	6,477,957	27.7	30.2	36.1	34.9
Pint	7,186,112	30.7	32.1	31.4	24.2
Quart	7,139,201	30.5	25.2	13.6	6.2
Gallon	1,586,980	6.8	6.6	7.3	5.7
Others	527,880	2.2	1.8	4.3	20.9*
Total	23,407,757	100.0	100.0	100.0	100.0

*Consisting principally of the 3½-, 7-, 8½- and 12-oz. jars.

NEW METHODS ...PACKAGES ...PRODUCTS



Perfect-portion Swiss cheese, Gruyere type, is another innovation of Kraft-Phenix Cheese Corp. Divided into 1⅛-oz. triangular portions, the Swiss is foil-wrapped and assembled, six in a box, under a transparent cellulose window.

"Early American" pasteurized process cheese has been added to the Borden line. Made from well-cured, well-aged real American Cheddar, the new cheese has a sharp and tangy taste. Borden packs it in ¼-lb. packages, the horizontal-bar design of which identifies it as one of the Borden family.

Suggesting the nature of the product through its color design and done in modern style, the new wrapper for the butter-cream bread baked by Cramer, San Diego, Calif., has good display value. The ends of the wrapper are so folded as to emphasize the size of the loaf, and the printing is so arranged that "sliced" always meets the eye.

Moisture is kept in the dried Sunsweet Prunes of California Prune & Apricot Growers' Association by a carton with an aluminum-foil tight wrapper. This preserves the "tenderized" quality of the fruit. Perfected by Reynolds Metal Co., Brooklyn, N. Y., the foil reduced moisture loss to 0.37 per cent in a test in which a paper tight-wrapped carton lost 4.28 per cent.

Pineapple Juice Inhibits Discoloration of Fruits

There is now available to fruit driers a common substitute for sulphur dioxide, the substance used to prevent darkening of the freshly cut surfaces of fruit. This substitute is nothing other than pineapple juice.

Credit for this discovery goes to Dr. A. K. Balls and Walter S. Hale, of the Food Research Division of the Bureau of Chemistry and Soils. Seeking a method of preventing discoloration which would displace the sulphuring process, objectionable to many consumers, these men found that the sulphydryl-containing amino acids and peptides, typified by glutathione and cysteine, had the desired reaction and was not poisonous. Since the natural activator of the proteolytic enzyme in pineapple juice is a sulphydryl compound, experiments were conducted to determine the effectiveness of the juice. The result was the same as with chemicals, as far as inhibiting the color formation was concerned.

Dried apples, sprayed with pineapple juice, were held in the laboratory for several months, and these apples, the chemists report, are just as white now as when the treatment was first made. The method also appears to work well with many other fruits and vegetables, although more work remains to be done on that.

Fruits that have been sprayed with pineapple juice carry a thin film of dry residue from the juice. While the chemists see no objection to this residue, it may be avoided by first fermenting the juice, removing the yeast and alcohol, and using the purified liquid in the spraying process.

The new discovery has vast commercial possibilities. In 1931, according to the Census of Manufactures, there were produced 44,332,214 lb. of dried apples, more than 74,000,000 lb. of dried apricots and more than 50,000,000 lb. of dried peaches. Most of these products were treated with sulphur dioxide.

Application has been made for a public service patent to make the process free.

Package distinction may be gained for a product by putting it in a stock container used in another field. This has been done by Waples-Platter Co., Dallas and Fort Worth, Texas, which adopted the oblong bottle, popular in the pharmaceutical and proprietary field, for its White Swan vinegar.

CO_2 a Precooling Substitute

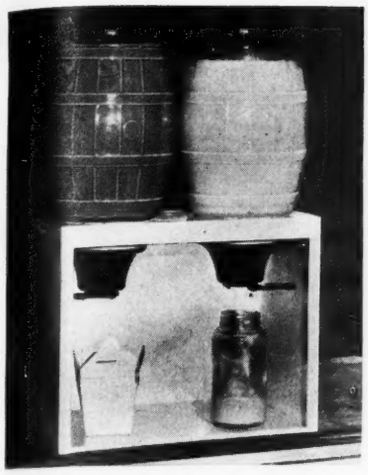
Gassing fruit shipped in refrigerator cars with carbon dioxide will substantially decrease losses cause by rots and other diseases developing during shipment, it has been found by Department of Agriculture chemists. And this treatment has practically the same effect as precooling, for which it can be used as a substitute. The fruit is treated by placing a small quantity of solid CO_2 over the load or in the ice bunkers in a car in addition to the ordinary icing.

Further studies are needed to determine just how much carbon dioxide to use with different fruits, for it was found that CO_2, if too concentrated, injures certain fruits and causes a loss of their aroma.

Canned Reducing Diet

So widely was the banana-and-skimmed-milk reducing diet publicized that a commercial food has been developed to supply it in combined form. The new product consists of dehydrated bananas and dried skimmed milk, with approximately 400 units (A.D.M.A.) of vitamin A and 200 units of vitamin D added per ounce to give higher health value.

Ripened in an air-conditioned room, the bananas are dehydrated by the Northjohn process, 12 lb. of fruit making about 1 lb. of powder. Two parts of this powder are then mixed with three of the dried skimmed milk, after which the vitamin, concentrated from cod liver oil, is added. Trademarked Banola, the product was developed by the newly organized Banana Products Co., New York, N. Y.



Bulk Dispenser Introduced In Mayonnaise War

As a result of a mayonnaise war in the Northwest, which involved a battle among the ads and price tags, a sanitary dispenser for bulk mayonnaise has come into use. It is the answer to charges of packers in individual jars that the bulk product is unsanitary. Consisting of a crystal-clear, barrel-shaped, molded glass container with Bakelite fixtures, the dispenser is mounted on a white enameled stand. The "barrels" are delivered to the retailer sealed, and the mayonnaise is dispensed by opening a large valve at the bottom. An agitator operated from the top facilitates delivery of the contents. The same dispenser is used for peanut butter, and the illustration shows a stand for both products.

Commercial Vitamin C

Synthetic vitamin C can now be manufactured on a commercial scale. Discovered some months ago, the process for this (the first chemical synthesis of any vitamin) has been so elaborated and improved upon that actual production of vitamin C on a large scale has been achieved. This is according to an announcement from the laboratories of Hoffmann-La Roche, Nutley, N. J. The new synthetic product has been named Redoxon.

Another Vegetable Purée

A vegetable purée containing 560 units of vitamin A, 3 of vitamin B and 3 of vitamin G per ounce (Sherman method) recently was brought out by Certifoods, Inc., New York, N. Y. The purée contains carrots, spinach and tomatoes, without seasoning or sugar. The vegetables are mixed, heated to 71 deg. C., sieved in an atmosphere of nitrogen gas and then canned, processed and packed. The processing continues for 40 minutes at 116 deg. C.

Figs Frozen in California

Intended for high-class trade, frozen figs have been placed on the California market by Kodota Fig Gardens at Waterford. According to George A. Erb, of the packing firm, the temperatures used in freezing the figs range from 10 deg. F. to zero. The time of freezing varies from several hours upward, depending on the size of the package. Some of the figs have been frozen before packing and some after packing, but the latter method is favored.

Kodota Gardens grow all their own fruit, selecting choice specimens for the chilled pack. These are hand-peeled and chilled as soon as picked. Since the fig is delicate and easily bruised by rough handling, costs mount high in preparing the fruit.

Most of the shipments made to date have been by express with solid CO_2 as the refrigerant. However, transcontinental shipment is not practical by this method on account of the cost of the refrigerant and the express charges on it, the packers find. It is expected that refrigerated boats will be used on long shipments.

Meat and Cheese Loaf

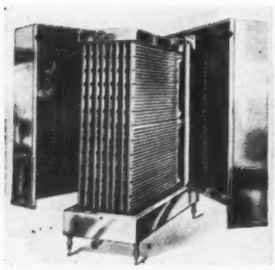
Meat and cheese have been combined by Kuhner Packing Co., Muncie, Ind., to form a "meat-bar" delicacy. The bar, or loaf, may consist of beef, pork and veal, with cheese and such added attractions as pistachio nuts, olives and pimentoes. The cheese is treated with a gelatinous substance, after which it is combined, in layers, with the meat. A caul is then placed around this combination and the whole covered with fine-textured fabric. Next, the product is subjected to pressure and cooked, after which the fabric is removed. Slices of this bar remain firm and intact, the meat and cheese layers adhering, and they have quite an appetizing appearance.

Quick-setting gelatin aspic having a meaty flavor and requiring no seasoning has been developed by Standard Brands, Inc., New York, N. Y. Said to be the only product of its kind on the market, Royal Gelatin Aspic will ease the housewife's task of preparing meats and vegetables in aspic.

Something extraordinary in reuse containers is the green glass pitcher in which cookies are packed by Dolly Madison Cakes, Ltd., Los Angeles. Wrapped in glassine, the pack is tied with a magenta ribbon matching the label.

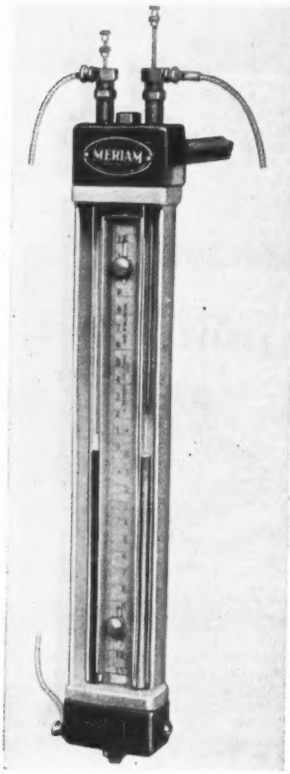
Minitmix, Pillsbury's new prepared biscuit flour, met with success in the New York market and is now being introduced into other territories. It contains a new vegetable shortening said to stay "sweet" three times longer than those ordinarily used. It also embodies a new long-lived leavening agent.

The traditional cork for wine bottles has been replaced with a double-shell metal screw cap by E. G. Lyons & Raas Co., San Francisco. With these caps the wine may be stored in an upright position, since the closure need not be kept wet. This facilitates decanting, as the sediment is at the bottom. Other advantages are rapid machine capping, easy opening and reclosing, and protection of the pouring lip. Lyons & Raas find this closure "superior in many ways to the old-style cork for everything but dry wines."



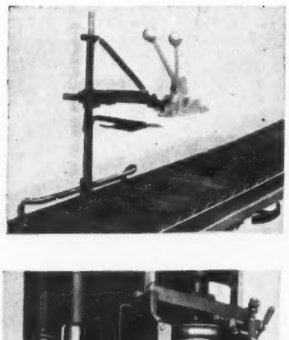
Welded Sheets Used In Compact Cooler

Corrugated stainless steel or Inconel sheets take the place of standard tubes in the compact cooler now being offered by Mojonnier Bros. Co., 4601 West Ohio St., Chicago, Ill. The sheets are welded together so that the general principle of operation in cooling liquids is the same as that of the tubular type. The return bends are formed from the same sheets as the "tubes," and all surfaces are seamless. The sections are placed side by side to save space, but swivel open for cleaning. Direct-expansion ammonia, brine and sweet water may be used for cooling, capacities ranging from 2,000 to 25,000 lb. per hour. Minimum space required is 6x9 ft.



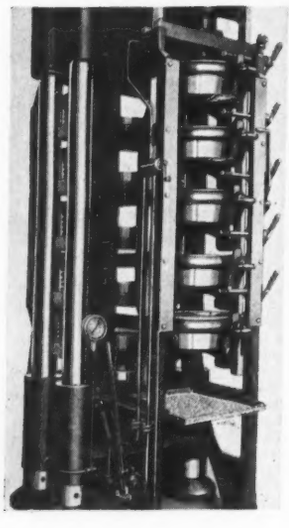
Controller

Various applications for controlling the flow of liquids and gases are provided for in the design of the manometer-regulator manufactured by Meriam Co., 1955 West 112th St., Cleveland, Ohio. As shown in the illustration, two separate glass tubes are used in place of the usual U-tube; however, the iron block into which they fit is drilled to provide a U-connection. Three terminals—one on the block, the other two at the upper ends of the tubes—are provided. The upper terminals are connected to noncorroding adjustable tungsten wires which pass through the Bakelite plugs in the upper ends of the tubes; these wires may be set so that either of them makes contact with the mercury at the predetermined differential pressure or vacuum.



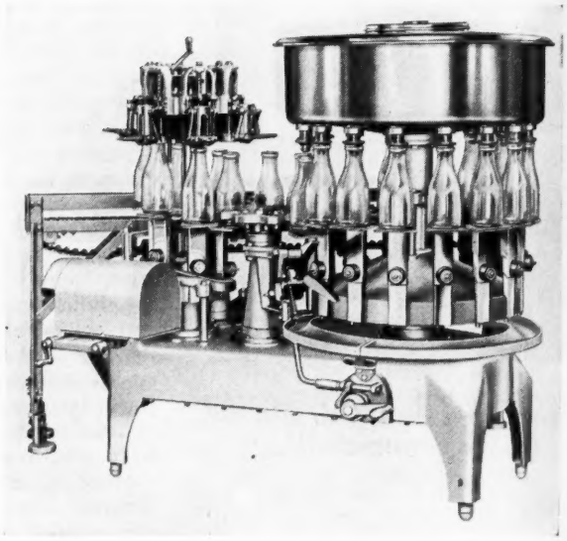
Strapping Aid

To speed up strapping of packages varying in size from small bundles to large crates, a tool mount, package guide and package-stop installation is offered by Acme Steel Co., Chicago, Ill. The tool mount (for packaging with "Steelstrap") is adjustable for packages of various heights. The package guide and stop are furnished to meet individual needs. The entire unit is available attached to a roller conveyor or can be incorporated in an established system.



Cocoa Press

Reduced labor, improved temperature conditions, and faster and more uniform pressing are said to be the advantages of the 5-pot cocoa press manufactured by Fred S. Carver, 345 Hudson St., New York, N. Y. Its floor-space requirements are only about half those of the 10-pot model, it is asserted, yet its production capacity is practically the same. The ejectors now eject all five cakes at once, while the filler valves fill all the pots simultaneously, with a trickle arrangement to insure uniform filling. These automatic functions speed up ejecting and filling operations. The five 18-in. pots hold a charge of 250 lb. of liquor. The unit is 10 ft. 8 in. high and requires 5 ft. 6 in. x 4 ft. 10 in. of floor space.

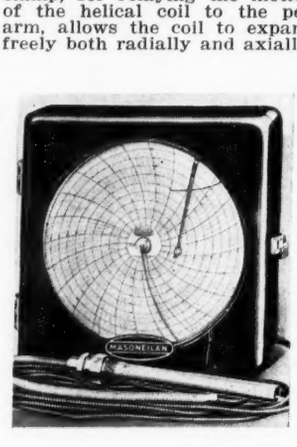


Filler, Capper Has "Rolling" Action

"Rolling" action, to provide for extra smooth operation, is featured in a line of milk-bottle filling and capping machines marketed by Cherry-Burrell Corp., 427 West Randolph St., Chicago, Ill. By means of a series of cams on which rollers operate, the bottles are raised both to the filling valves and to the capping plungers. The machine also includes a variable speed control which makes possible the synchronization of the filler and washer speeds and which includes a safety automatic throw-out device. The largest of the line of fillers and cappers is powered with a ½-hp. motor and has a capacity of 90 quart bottles per minute.

Graphic Thermometer

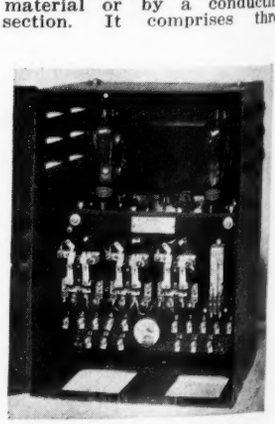
An overheat protector which guards the thermal element against temperatures in excess of the temperature range is one of the features of the recording thermometer, Type No. 3076, offered by Mason-Neilan Regulator Co., 1190 Adams St., Boston, Mass. It is said that with the protector excess temperatures up to 500 deg. F. above the chart range will do no damage. A floating coil clamp, for relaying the motion of the helical coil to the pen arm, allows the coil to expand freely both radially and axially.



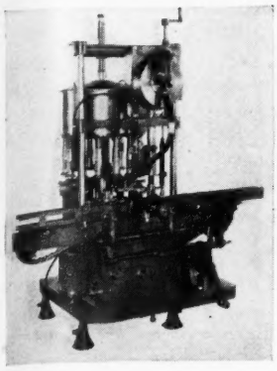
and only the angular rotation of the coil is transmitted to the pen arm. Recorders with multiple pens for registering several different temperatures are also available. The instrument is contained in a square Duralumin case with chromium-plated hinges and hasp. The instrument is said to have a minimum of friction and lost motion, thereby making it highly accurate.

Prevents Errors In Cutting

Plain or waxed paper and transparent cellulose may be cut in accordance with print, label or other pattern, and forward and reverse correction effected with the cutter-regulator developed by Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. It is arranged to operate from phototubes or from contacts operated by a small perforation in the material or by a conducting section. It comprises three



units: the photo-troller; the scanner; and the synchronous selector, a rotary limit switch which selects the direction of the correction. One photo-tube scans unprinted paper; the other, the pattern. Thus, operation depends on the differential of light reflection or transmission between the background and the spot rather than on the absolute color or opacity of the spot.



Filler and Capper

Capping quickly follows filling on the 14-tube automatic Horix-Haller rotary filler and crowner being offered by Horix Manufacturing Co., Corliss Station, Pittsburgh, Pa. As the capper and filler are built as a single unit, the bottle is capped as it is discharged from the rest to the delivery table, traveling about 7 in. between filler and capper. Storage tanks are furnished in stainless steel, Monel or nickel. Tubes are available for filling catsup, chili sauce, syrups, vinegar, fruit juices, chocolate beverages, as well as other food products.

Quick-Sealing Glue

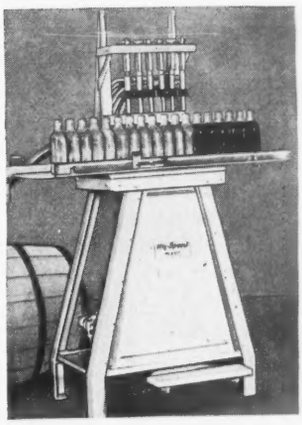
For fast and economical sealing, Cibara Manufacturing Co., 2234 Eugenia St., St. Louis, Mo., has developed a case-sealing glue, Super Tex. Soluble in 2¼ parts of warm water, the glue is said to be free-flowing and to have about 30 per cent greater spreading capacity than heavy glue or silicate of soda. It seals not only all types of cases by hand or machine application under normal pressure but also Fourdrinier kraft-lined board, which holds 20 seconds after the application, the manufacturer asserts.

Industrial Paint

Increased resistance to "yellowing" is listed as one of five recent improvements in its white paint product Barreled Sunlight, by United States Gutta Percha Paint Co., 0019 Dudley St., Providence, R. I. Other results of development work are: greater light reflection, increased spreading and hiding power, and easier flow. With the announcement of these improvements, the manufacturer states that his product "Rice Process" white will remain white longer than any oil-gloss paint or enamel, domestic or foreign, applied under the same normal service conditions and according to his specifications.

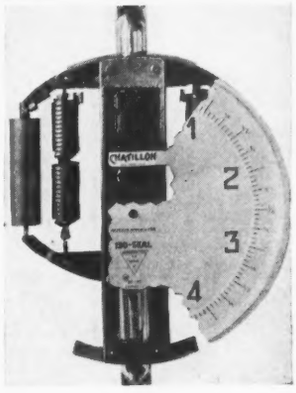
Filler Spouts Close Automatically

Automatic closure of the filling spouts when withdrawn from the bottles, to eliminate dripping and to maintain a higher vacuum is a feature of the "Hy-speed" bottle filler manufactured by Alsop Engineering Corp., 39 West 60th St., New York, N. Y. Furthermore, the manufacturer asserts, any excess liquid drawn into the bottle before the spout is released is sucked out by a special tube, and the liquid returned to the supply tank. Filling spouts are individually compensated, each one operating on a spring to enable any one of them to descend farther than the rest, to fill a smaller bottle. Adjustments provide for feeding and filling bottles of different sizes and shapes. Up to 2,500 quarts or fifths may be filled per hour.



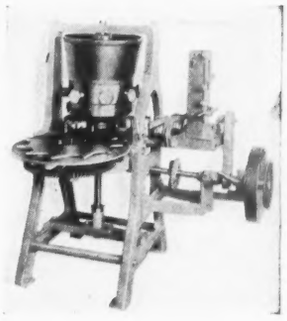
Shows No Variation With Temperature

Immunity to temperature changes has been achieved in the "Iso-Seal" scale, state the developers and manufacturers, John Chatillon & Sons, 85 Cliff St., New York, N. Y. This immunity is possible by the use of a special metal, "iso-elastic," in the springs, of which the modulus of elasticity is constant for all practical purposes during wide temperature changes. All essential parts are made of rust- or corrosion-resistant materials. The scale, available in capacities from 10 to 200 lb., has two 13-in. dials reading clockwise, permitting reading from either side. To avoid a parallax in reading, the dials are recessed, the pointer traveling within the recess and coming to the edge of the graduation marks.



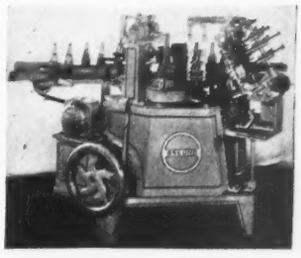
Liquid Filler

Up to 150 No. 1 cans per minute can be filled with the soup and liquid filler manufactured by Ayars Machine Co., Salem, N. J., whether the liquid be heavy soup, clam chowder, thin soup, puree or tomato juice. All parts in contact with the liquid, including the eight measuring pockets and the hopper, are made of nickel. The drive may be by pulley or by connection with the closing machine. Either star wheel or plain disk delivery is supplied.



Labels and Foils

Top foiling as well as neck and body labeling may be done in one operation with the automatic labeler developed by Oslund Bros. Machine Co., South Main St., Holden, Mass. The machine may also be equipped to handle flat as well as round bottles, jars, tumblers and other packages. It is the rotary type, and has four stations, turning out up to 80 bottles per minute. To avoid spattering glue into the machine, the label pickers are glued directly over the glue box. They carry the labels to the bottle, and a "gripfinger" holds the label fast while it is being stripped from the picker and while the bottle is going through the wipers. Back rests keep the bottles from tipping, and a device like a curved hand discharges them. The labeling mechanism overlaps the lower part of the foil with the neck label. Either aluminum, paper-backed, or tin foil may be handled.



Insulating Jacket

Intended for one service use on 2½-gal. paper ice cream containers, an insulating jacket has been developed by Jiffy Pad & Excelsior, Inc., 45 Washington St., Boston, Mass. The casing is made from two sheets of kraft paper, interlined with macerated wood-pulp filler, and sealed on all four edges. It is then rolled into cylindrical form and pressed flat. It may be used alone or together with dry ice.

The Manufacturers ••Offer••

Autoclaves — Jacketed and direct-fired types. Blaw-Knox Co., Pittsburgh, Pa. Catalog 1482, 19 pp.; very well illustrated.

Manual—For working with stainless clad steel. Ingersoll Steel & Disc Co., 310 South Michigan Ave., Chicago, Ill. Booklet, 15 pp.; illustrated with many IngAClad installation photographs.

Aluminum Paint — "Permite" discussed in "Buy It by the Foot." Aluminum Industries, Inc., Cincinnati, Ohio. Illustrated folder.

Irradiation—Evaporated milk fortified with vitamin D by the Steenbock process. Wisconsin Alumni Research Foundation, Madison, Wis. Booklet, 15 pp.; bibliography.

White Paint—The advantages of heat and light reflection. New Jersey Zinc Co., New York, N. Y. Booklet, 18 pp.; very well illustrated.

Portable Instruments — A.c. and d.c. ammeters, voltmeters, milli-voltmeters and milli-ammeters. Roller-Smith Co., 233 Broadway, New York, N. Y. Sheet No. 7, catalog 133; illustrated.

Ammonia Compressors — Large, inclosed-type, described in "Ice and Frost." Frick Co., Waynesboro, Pa. Bulletin 112-D, 15 pp.; profusely illustrated.

Caps—The Amerseal closure. Anchor Cap & Closure Corp., Long Island City, N. Y. Illustrated folder.

Rolled Creams—12 formulas. Nulomoline Co., 111 Wall St., New York, N. Y. Folder in tabular form.

Sour-Cream Processing — Vacuum recirculating system for heating, cooling, de-aerating and removing off-flavors. Pfaudler Co., Rochester, N. Y. Bulletin 755, an illustrated folder, and Technical Bulletin No. 100, an illustrated, 8-page booklet, describe the machinery and process, the latter reporting experiment with the process at Pennsylvania State College.

Packings—More than 60 different types. Johns-Manville, 22 East 40th St., New York, N. Y. Catalog, 48 pp.; well illustrated. Includes description of each item, table of recommendations for suiting individual needs, and discussion of installation methods.

Roasted Coffee—Its acidity, reported from research work in the Miner Laboratories, Chicago. National Federation of Coffee Growers of Colombia, 96 Front St., New York, N. Y. Booklet, 15 pp. Includes charts.

Valves—Non-electric thermostatic controls. Fox Engineering Co., 36 Portland St., Boston, Mass. Illustrated folder.

Centrifugal Pumps—For acids and alkalis. Duriron Co., Inc., Dayton, Ohio. Bulletin No. 172, 4 pp.; illustrated.

Glass-Lined Steel—Its 50th anniversary described in "The Glass Lining," Vol. 8, No. 2. Pfaudler Co., Rochester, N. Y. Booklet, 23 pp.; illustrated.

Display Cans—Glass-top tins. Continental Can Co., New York, N. Y. Illustrated folder.

Flaking Mills—For cereals. Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin 1249, 15 pp.; well illustrated. Includes list of all company products.

Where Does Gas in Roasted Coffee Come From?

(Concluded from page 349)

cent), oleic (2 per cent) and linoleic (50 per cent) acids and is unusually rich in unsaponifiable material. All of these esters and free acids occur in numerous other seed oils which keep for a very long time. Why is it, then, that the oil of roasted coffee does not keep? One reason undoubtedly is the fine distribution of very thin layers in the numerous cells of the coffee bean. The result is that the surface exposed to oxidation in each coffee bean is a million times greater than it would be if the oil were condensed in one single drop. All those cells, as explained before, have been exploded by the escaping steam during the process of roasting. Grinding of the roasted coffee bean breaks the protecting outer layer of wax-saturated fiber and leaves all the oil coatings of the cells open to oxidation.

Yet why is it that the oil in the fresh non-roasted coffee bean does not oxidize? In fact, green coffee beans improve with aging.

Matill and Crawford[11] state, in their article on the auto-oxidation of corn oil, that the keeping qualities of fats and oils are primarily dependent upon the relative proportions of "pro-oxidants" and "anti-oxidants" which they contain. Heat-treated oils often show a much shorter induction period than untreated oils. During raffination, slightly heated sterols lose their anti-oxidant properties. Coffee oil in the green bean is rich in sterol, and therefore keeps. The coffee oils and their sterols are exposed during the period of roasting to extreme heat. It is natural that the anti-oxidant properties of the large quantity of sterols present in the oil are thereby destroyed.

The loss of the anti-oxidant, together with the large exposed surface and the breaking of the protective shell of wax, produces a fast oxidation of the oil.

It is necessary to consider the rôle the waxes, oils and fats play during the process of roasting. It has long been known that such substances have a great affinity for aroma. In the manufacture of attar of roses and other natural perfumes, these substances are used to absorb the aroma from the leaves of roses and other flowers. If the green coffee bean did not contain these substances, the total amount of aroma would be lost during the process of roasting. As it is, these substances absorb the aroma produced and hold it tenaciously. Only water can wash these substances free from the aroma which they hold. But when these substances become oxidized they undergo not only changes in their own structure, taste and odor but also gradually lose their capacity for absorbing and holding the real aroma of coffee. Roasted coffee then becomes stale.

The roasted-coffee industry tries to overcome this oxidation of the fats by vacuum-packing, oblivious to the loss in freshness, as shown in the curves of Punnett and Eddy.

The liquid-coffee industry[12] has overcome the oil-oxidation difficulties by removing by mechanical means almost the entire quantity of oil present in the liquid coffee. The small quantity of oil remaining no longer has an immense surface, but, as a thin film on top of the liquid coffee in the neck of the bottle, it serves as a seal against loss of aroma.

I believe: That CO_2 gas in roasted coffee is produced by a chemical reaction of reducing sugars on amino acids; that the gradual loss of freshness is due to the carrying off of aroma by the developed CO_2 gas and to the diminished capacity of the partly decomposed oil and fat for holding aroma; and that the quick oxidation of the oil and fat in roasted coffee is due to the loss of anti-oxidant power of the sterol in the oil and to the great surface exposed to oxidation.

[11] *Ind. Eng. Chem.*, Vol. 22, P. 341 (1930).

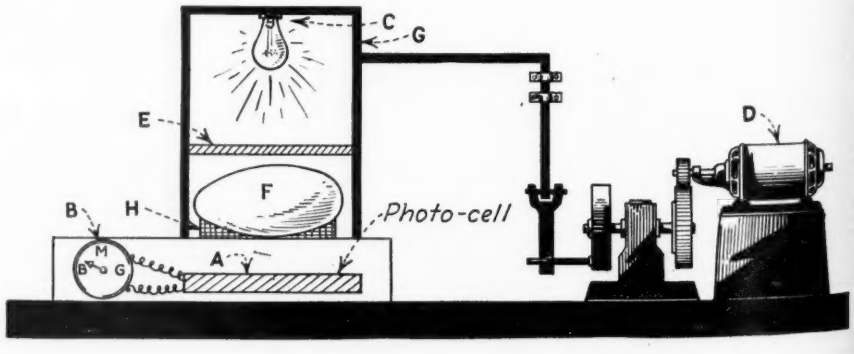
[12] U. S. Patent applied for by Straitway Coffee, Inc., Keyport, N. J.

Eggs Candled Automatically

(Concluded from page 363)

matic machinery without breaking them. Also the method of handling had to provide that all light reaching the photo-cell must pass through the egg. This problem was solved by the use of a rubber ring on the inside of a steel ring. When the egg is in this ring, compressed air at low pressure passes between the rubber and the steel rings and causes the rubber ring to fit snugly around the egg. Handled in this way, the egg transmits all the light that reaches the photo-cell and is in no danger of being broken during the operation.

However, the machine will not always throw out eggs with blood spots and broken yolks when they are of edible quality. About two out of every hundred eggs are of this questionable grade, the inventor estimates. Inedible eggs are discarded. Brown shell eggs may be graded as easily and accurately as white shell ones.



A—Photo Cell, Self-generating.

B—Ammeter, calibrated to indicate "Good," "Medium," or "Bad," according to the amount of light passing through egg and consequently amount of electric current generated by photo-cell.

C—Electric light.

D—Motor.

E—Light filter.

F—Egg.

G—Cover; raised and lowered by motor.

H—Soft rubber cushion for egg.